

HOW TO READ THE STANDARD OF CBN & PCD TURNING INSERTS

How this section page is organised

- Organised according to turning insert shape. (Refer to the index on the next page.)
- Inserts are arranged in order of :
 - Negative inserts (with hole→without hole)
 - Positive inserts (with hole→without hole)

GRADE APPLICATION RECOMMENDED FOR EACH WORK MATERIAL
cutting conditions suitable for each type of work material is shown as a general guide to select the grade.

- Stable Cutting
- General Cutting
- ✘ Unstable Cutting

SHAPE & ANGLE MARK

PRODUCT SECTION

INDICATION OF NEGATIVE/POSITIVE TYPE

TITLE OF PRODUCT ACCORDING TO THE INSERT TYPE

FIGURE SHOWING THE INSERT GEOMETRY
IC : Diameter of Inscribed Circle S : Thickness RE : Corner Radius
LE : Cutting edge effective length D1 : Diameter of Hole
Dimensions are detailed in the "Dimensions" column.

STOCK STATUS

INSERT NUMBER

INSERT GRADES

INSERT DIMENSIONS

CBN TURNING INSERTS [NEGATIVE]		80° CN TYPE INSERTS WITH HOLE		Cutting Conditions (Grade)		Dimensions (mm)		Geometry		Applicable Holder Page		
Work Material	Grade	Shape	Order Number	IC	S	RE	LE	D1	Geometry	Holder Page	Holder Page	
CBN	K Cast Iron	S	NP-CNGA120404FS4	12.714.76	0.4	1.9	3.16					
			NP-CNGA120408FS4	12.714.76	0.8	2.1	3.16					
			NP-CNGA120412FS4	12.714.76	1.2	2.3	3.16					
			NP-CNGA120404GS4	12.714.76	0.4	1.9	3.16					
			NP-CNGA120408GS4	12.714.76	0.8	2.1	3.16					
			NP-CNGA120412GS4	12.714.76	1.2	2.3	3.16					
			NP-CNGA120404GA4	12.714.76	0.4	1.9	3.16					
			NP-CNGA120408GA4	12.714.76	0.8	2.1	3.16					
			NP-CNGA120412GA4	12.714.76	1.2	2.3	3.16					
			NP-CNGA120404GH4	12.714.76	0.4	1.9	3.16					
NEG	K Cast Iron	S	NP-CNGA120408HS4	12.714.76	0.8	2.1	3.16					
			NP-CNGA120412HS4	12.714.76	1.2	2.3	3.16					
			NP-CNGA120404TS4	12.714.76	0.4	1.9	3.16					
			NP-CNGA120408TS4	12.714.76	0.8	2.1	3.16					
			NP-CNGA120412TS4	12.714.76	1.2	2.3	3.16					
			NP-CNGA120404TA4	12.714.76	0.4	1.9	3.16					
			NP-CNGA120408TA4	12.714.76	0.8	2.1	3.16					
			NP-CNGA120412TA4	12.714.76	1.2	2.3	3.16					
			NP-CNGA120404TH4	12.714.76	0.4	1.9	3.16					
			NP-CNGA120408TH4	12.714.76	0.8	2.1	3.16					
NEG	K Cast Iron	S	NP-CNGA120412TH4	12.714.76	1.2	2.3	3.16					
			NP-CNGA120404GN4	12.714.76	0.4	1.9	3.16					
			NP-CNGA120408GN4	12.714.76	0.8	2.1	3.16					
			NP-CNGA120412GN4	12.714.76	1.2	2.3	3.16					
			NP-CNGA120404FSWS4	12.714.76	0.4	1.9	3.16					
			NP-CNGA120408FSWS4	12.714.76	0.8	2.1	3.16					
			NP-CNGA120412FSWS4	12.714.76	1.2	2.3	3.16					
			NP-CNGA120404GSWS4	12.714.76	0.4	1.9	3.16					
			NP-CNGA120408GSWS4	12.714.76	0.8	2.1	3.16					
			NP-CNGA120412GSWS4	12.714.76	1.2	2.3	3.16					
NEG	K Cast Iron	S	BF-CNGG120404TA4	12.714.76	0.4	1.9	3.16					
			BF-CNGG120408TA4	12.714.76	0.8	2.1	3.16					
			BF-CNGG120412TA4	12.714.76	1.2	2.3	3.16					

CBN TURNING INSERTS [POSITIVE]		80° CN TYPE INSERTS WITH HOLE		Cutting Conditions (Grade)		Dimensions (mm)		Geometry		Applicable Holder Page	
Work Material	Grade	Shape	Order Number	IC	S	RE	LE	D1	Geometry	Holder Page	Holder Page
CBN	K Cast Iron	S	NP-CNGA120402FS2	12.714.76	0.2	1.8	3.16				
			NP-CNGA120404FS2	12.714.76	0.4	1.9	3.16				
			NP-CNGA120408FS2	12.714.76	0.8	2.1	3.16				
			NP-CNGA120412FS2	12.714.76	1.2	2.3	3.16				
			NP-CNGA120402GS2	12.714.76	0.2	1.8	3.16				
			NP-CNGA120404GS2	12.714.76	0.4	1.9	3.16				
			NP-CNGA120408GS2	12.714.76	0.8	2.1	3.16				
			NP-CNGA120412GS2	12.714.76	1.2	2.3	3.16				
			NP-CNGA120402GA2	12.714.76	0.2	1.8	3.16				
			NP-CNGA120404GA2	12.714.76	0.4	1.9	3.16				
NEG	K Cast Iron	S	NP-CNGA120408GA2	12.714.76	0.8	2.1	3.16				
			NP-CNGA120412GA2	12.714.76	1.2	2.3	3.16				
			NP-CNGA120404GH2	12.714.76	0.4	1.9	3.16				
			NP-CNGA120408GH2	12.714.76	0.8	2.1	3.16				
			NP-CNGA120412GH2	12.714.76	1.2	2.3	3.16				
			NP-CNGA120404HS2	12.714.76	0.4	1.9	3.16				
			NP-CNGA120408HS2	12.714.76	0.8	2.1	3.16				
			NP-CNGA120412HS2	12.714.76	1.2	2.3	3.16				
			NP-CNGA120404TS2	12.714.76	0.4	1.9	3.16				
			NP-CNGA120408TS2	12.714.76	0.8	2.1	3.16				
NEG	K Cast Iron	S	NP-CNGA120412TS2	12.714.76	1.2	2.3	3.16				
			NP-CNGA120404TA2	12.714.76	0.4	1.9	3.16				
			NP-CNGA120408TA2	12.714.76	0.8	2.1	3.16				
			NP-CNGA120412TA2	12.714.76	1.2	2.3	3.16				
			NP-CNGA120404TH2	12.714.76	0.4	1.9	3.16				
			NP-CNGA120408TH2	12.714.76	0.8	2.1	3.16				
			NP-CNGA120412TH2	12.714.76	1.2	2.3	3.16				
			NP-CNGA120404GN2	12.714.76	0.4	1.9	3.16				
			NP-CNGA120408GN2	12.714.76	0.8	2.1	3.16				
			NP-CNGA120412GN2	12.714.76	1.2	2.3	3.16				
NEG	K Cast Iron	S	NP-CNGA120404GS2	12.714.76	0.4	1.9	3.16				
			NP-CNGA120408GS2	12.714.76	0.8	2.1	3.16				
			NP-CNGA120412GS2	12.714.76	1.2	2.3	3.16				
			NP-CNGA120404FS2	12.714.76	0.4	1.9	3.16				
			NP-CNGA120408FS2	12.714.76	0.8	2.1	3.16				
			NP-CNGA120412FS2	12.714.76	1.2	2.3	3.16				
			NP-CNGA120404SE2	12.714.76	0.4	1.9	3.16				
			NP-CNGA120408SE2	12.714.76	0.8	2.1	3.16				
			NP-CNGA120412SE2	12.714.76	1.2	2.3	3.16				

LEGEND FOR STOCK STATUS MARK
is shown on the left hand page of each double-page spread.

PHOTO OF INSERT

PAGE REFERENCE
-GRADES
-TECHNICAL DATA
indicates reference pages, on the right hand page of each double-page spread.

PRODUCT NAME

APPLICABLE HOLDER PAGE
indicates reference pages for details of applicable holders.

To Order : Please specify
①insert number and ②grade.

TURNING TOOLS

CBN & PCD INSERT STANDARDS

CBN & PCD INSERT GRADES

IDENTIFICATION B002
 CLASSIFICATION OF CBN & PCD GRADES B004
 CBN (CUBIC BORON NITRIDE) B006
 PCD (SINTERED DIAMOND) B021
 CLASSIFICATION OF CBN & PCD INSERTS B022

STANDARD OF CBN TURNING INSERTS

NEGATIVE INSERTS WITH HOLE

CN $\odot\odot$ TYPE...RHOMBIC 80° B028
 DN $\odot\odot$ TYPE...RHOMBIC 55° B032
 SN $\odot\odot$ TYPE...SQUARE 90° B037
 TN $\odot\odot$ TYPE...TRIANGULAR 60° B039
 VN $\odot\odot$ TYPE...RHOMBIC 35° B042
 WN $\odot\odot$ TYPE...TRIGON 80° B044

NEGATIVE INSERTS WITHOUT HOLE

CN $\odot\odot$ TYPE...RHOMBIC 80° B045
 DN $\odot\odot$ TYPE...RHOMBIC 55° B045
 RN $\odot\odot$ TYPE...ROUND B046
 SN $\odot\odot$ TYPE...SQUARE 90° B047
 TN $\odot\odot$ TYPE...TRIANGULAR 60° B048

POSITIVE INSERTS WITH HOLE

CC $\odot\odot$ TYPE...RHOMBIC 80° B049
 CP $\odot\odot$ TYPE...RHOMBIC 80° B053
 DC $\odot\odot$ TYPE...RHOMBIC 55° B054
 TC $\odot\odot$ TYPE...TRIANGULAR 60° B057
 TP $\odot\odot$ TYPE...TRIANGULAR 60° B058
 VB $\odot\odot$ TYPE...RHOMBIC 35° B061
 VC $\odot\odot$ TYPE...RHOMBIC 35° B062
 WC $\odot\odot$ TYPE...TRIGON 80° B063

POSITIVE INSERTS WITHOUT HOLE

SP $\odot\odot$ TYPE...SQUARE 90° B064
 TB $\odot\odot$ TYPE...TRIANGULAR 60° B065
 TP $\odot\odot$ TYPE...TRIANGULAR 60° B065
 RTG TYPE B063
 GY TYPE B066
 MGTR TYPE B067

STANDARD OF PCD TURNING INSERTS

NEGATIVE INSERTS WITH HOLE

CN $\odot\odot$ TYPE...RHOMBIC 80° B068
 DN $\odot\odot$ TYPE...RHOMBIC 55° B068
 SN $\odot\odot$ TYPE...SQUARE 90° B069
 TN $\odot\odot$ TYPE...TRIANGULAR 60° B069
 VN $\odot\odot$ TYPE...RHOMBIC 35° B070

NEGATIVE INSERTS WITHOUT HOLE

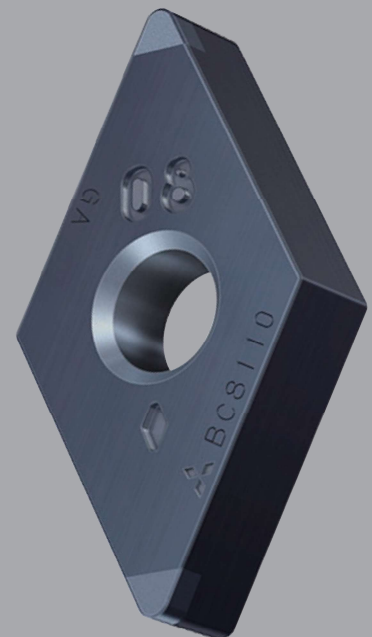
SN $\odot\odot$ TYPE...SQUARE 90° B071

POSITIVE INSERTS WITH HOLE

CC $\odot\odot$ TYPE...RHOMBIC 80° B072
 CP $\odot\odot$ TYPE...RHOMBIC 80° B072
 DC $\odot\odot$ TYPE...RHOMBIC 55° B073
 SP $\odot\odot$ TYPE...SQUARE 90° B073
 TC $\odot\odot$ TYPE...TRIANGULAR 60° B074
 TP $\odot\odot$ TYPE...TRIANGULAR 60° B075
 VB $\odot\odot$ TYPE...RHOMBIC 35° B077
 VC $\odot\odot$ TYPE...RHOMBIC 35° B077
 WC $\odot\odot$ TYPE...TRIGON 80° B078
 WP $\odot\odot$ TYPE...TRIGON 80° B078
 DE $\odot\odot$ TYPE...RHOMBIC 55° B079
 TE $\odot\odot$ TYPE...TRIANGULAR 60° B079
 VD $\odot\odot$ TYPE...RHOMBIC 35° B080

POSITIVE INSERTS WITHOUT HOLE

SP $\odot\odot$ TYPE...SQUARE 90° B081
 TP $\odot\odot$ TYPE...TRIANGULAR 60° B081



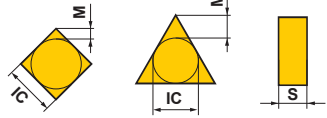
IDENTIFICATION

B








CBN & PCD TURNING INSERTS







T	10-inserts Package
No mark	1-insert Package
① Insert Case	








BM	With Breaker
BF	With Breaker
NP	New Petit Cut
No mark	Standard Type
② Insert Geometry	

						
Symbol	Tolerance of Nose Height M (mm)	Tolerance of Inscribed Circle IC (mm)	Tolerance of Thickness S (mm)			
G	±0.025	±0.025	±0.13			
M*	±0.08—±0.18	±0.05—±0.15	±0.13			
The surface of insert with * mark is sintered.						
Detail of M Class Insert Tolerance						
● Tolerance of Nose Height M (mm)						
D.I.C.	Triangular	Square	Rhombic 80°	Rhombic 55°	Rhombic 35°	Round
6.35	±0.08	±0.08	±0.08	±0.11	±0.16	—
9.525	±0.08	±0.08	±0.08	±0.11	±0.16	—
12.70	±0.13	±0.13	±0.13	±0.15	—	—
● Tolerance of Inscribed Circle IC (mm)						
D.I.C.	Triangular	Square	Rhombic 80°	Rhombic 55°	Rhombic 35°	Round
6.35	±0.05	±0.05	±0.05	±0.05	±0.05	—
9.525	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
12.70	±0.08	±0.08	±0.08	±0.08	—	±0.08
⑤ Tolerance Class						

① T ② NP - ③ C ④ N ⑤ G ⑥ A

③ Insert Shape		
Symbol	Insert Shape	
S	Square	
T	Triangular	
C	Rhombic 80°	
D	Rhombic 55°	
V	Rhombic 35°	
W	Trigon	
R	Round	

④ Normal Clearance		
Symbol	Normal Clearance	
B	5°	
C	7°	
D	15°	
E	20°	
N	0°	
P	11°	

⑥ Fixing and/or for Chip Breaker				
Metric				
Symbol	Hole	Hole Configuration	Chip Breaker	Figure
W	With Hole	Cylindrical Hole +	No	
T	With Hole	One Countersink (40—60°)	One Sided	
B	With Hole	Cylindrical Hole +	No	
H	With Hole	One Countersink (70—90°)	One Sided	
A	With Hole	Cylindrical Hole	No	
M	With Hole	Cylindrical Hole	One Sided	
N	Without Hole	—	No	
X	—	—	—	Special Design

Diameter of Inscribed Circle (mm)	Symbol						
3.97		02		04	03	03	06
4.76		L3	08	05	04	04	08
5.56		03	09	06	05	05	09
6.35		04	11	07	06	06	11
7.94		05	13	09	08	07	13
9.525	09	06	16	11	09	09	16
12.70	12	08	22	15	12	12	22

⑦ Insert Size

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

Symbol	Thickness (mm)
S1	1.39
01	1.59
T0	1.79
02	2.38
T2	2.78
03	3.18
T3	3.97
04	4.76

⑧ Insert Thickness

Symbol	Corner Radius (mm)
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6

⑨ Insert Corner Configuration

⑦ 12 **⑧ 04** **⑨ 04** **⑩ G** **⑪ WS** **⑫ 2** **⑬ J** **⑭ R**

⑩ Application (Honing)

Symbol	Honing
GS GA GB GH GN G	General Cutting
FS FA FB F	Continuous Cutting
TS TA TH T	Interrupted Cutting
SF SE	Cutting Sintered Alloys

⑪ Wiper

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

⑫ Number of Teeth

2	2
3	3
4	4
6	6
No mark	1

⑬ Cutting Edge Angle

F	91°
J	93°
No mark	Non Restriction

Please pay special attention when using an indexable insert.

⑭ Cutting Direction

Figure	Hand	Symbol
	Right	R
	Left	L
	Neutral	N

Refer to the Honing on page B016 for details.

CLASSIFICATION OF CBN & PCD GRADES

FEATURES

NON-COATED CBN MATERIALS

B

CBN & PCD TURNING INSERTS

CBN sintered materials base cutting tools are produced by binding CBN (cubic Boron Nitride) and ceramic having hardness next to diamond and sintering under ultra-high pressure and high temperature.

CBN has lower affinity to iron than diamond. The low affinity and high hardness properties means that sintered CBN delivers a superior cutting performance especially during high speed machining of materials such hardened steel, cast iron and sintered alloys etc.

COATED CBN MATERIALS

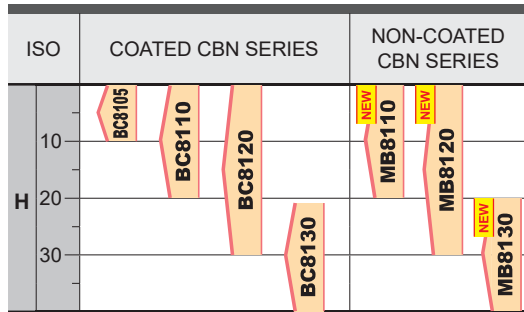
To achieve longer tool life, Mitsubishi uses a unique "Particle-activated Sintering Method", combined with increased cutting edge strength. With high crater wear resistance CBN grades and a wear resistant ceramic coatings, longer tool life and improved machine efficiency are obtained.

PCD MATERIALS (Sintered Diamond)

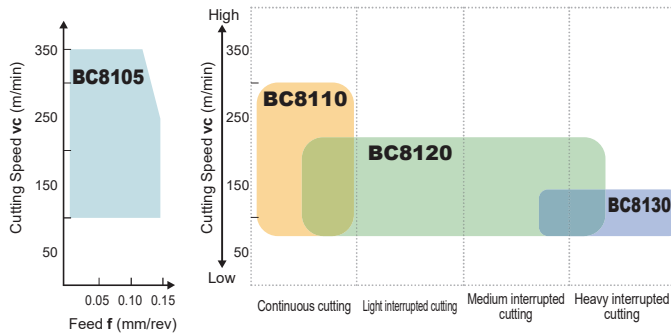
Suitable for cutting materials such as nonferrous metals and fiber reinforced plastics (FRP) including aluminium alloys. It supports ultra high speed finish cutting.

Work materials for turning grades/application area

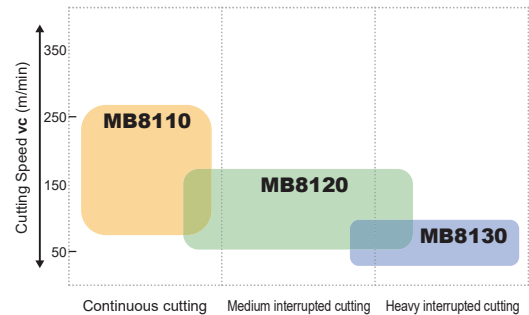
● Hardened Steel



COATED CBN MATERIALS



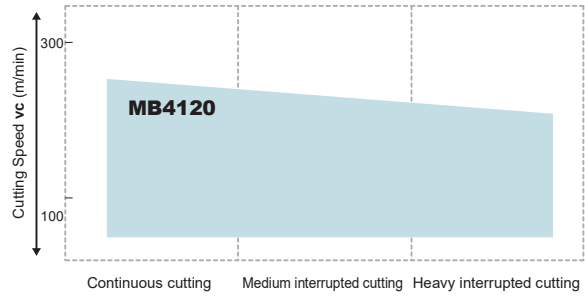
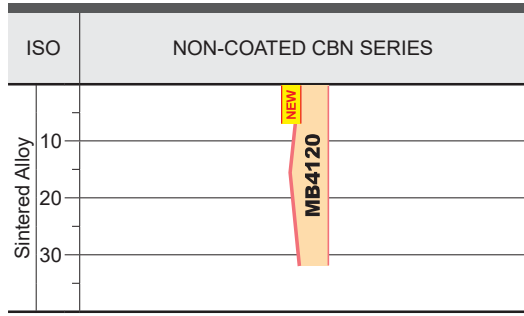
NON-COATED CBN MATERIALS



Suitable for finishing with surface roughness Ra 0.6 μm or Rz 2.4 μm or less.

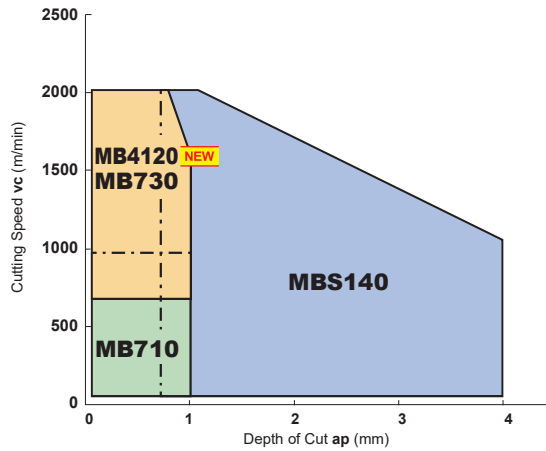
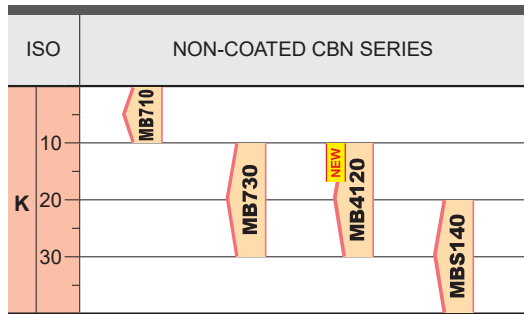
Coated CBN Grade BC8100 and Non-coated CBN Grade MB8100 for high-hardness steel processing are available in a wide range of areas from finishing to continuous cutting of hardened steels and strongly interrupted machining.

● Sintered Alloy



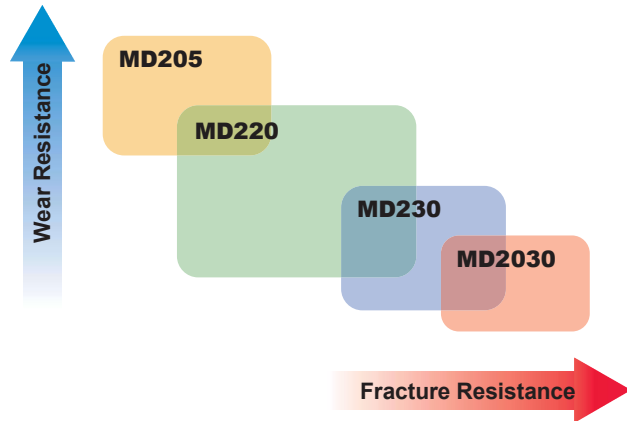
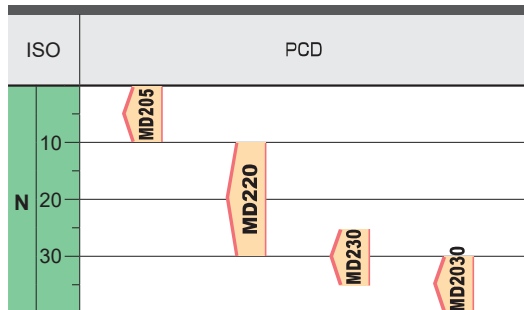
The CBN grade “MB4120” for sintered alloy and cast iron cutting can be used widely from continuous cutting to interrupted cutting in the processing of cast irons such as sintered alloys for valve mechanism parts and oil pump parts.

● Cast Iron



Lineup of grades available from general cutting to deep depth cutting for high efficiency machining.

● Aluminium Alloy



Suitable for cutting materials such as nonferrous metals and fiber reinforced plastics (FRP) including aluminium alloys. It supports ultra high speed finish cutting.

COATED CBN

BC8100 series for machining of hardened steel

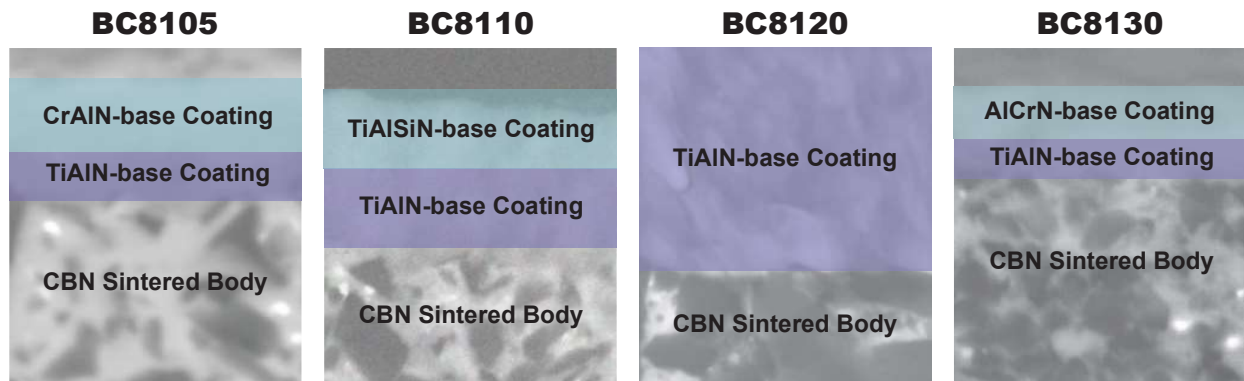
FEATURES

B

CBN & PCD TURNING INSERTS

The coated CBN grade BC8100 series and non-coated CBN grade MB8100 series for cutting of hardened steel uses new developed optimized substrate technology CBN base material. The new ultra-micro-binder prevents sudden fracturing and longer tool life. The BC8100 series coating exhibit excellent fracture resistance and wear resistance by using a special PVD coating suitable for each cutting mode.

■ Newly Developed Special PVD Coating



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

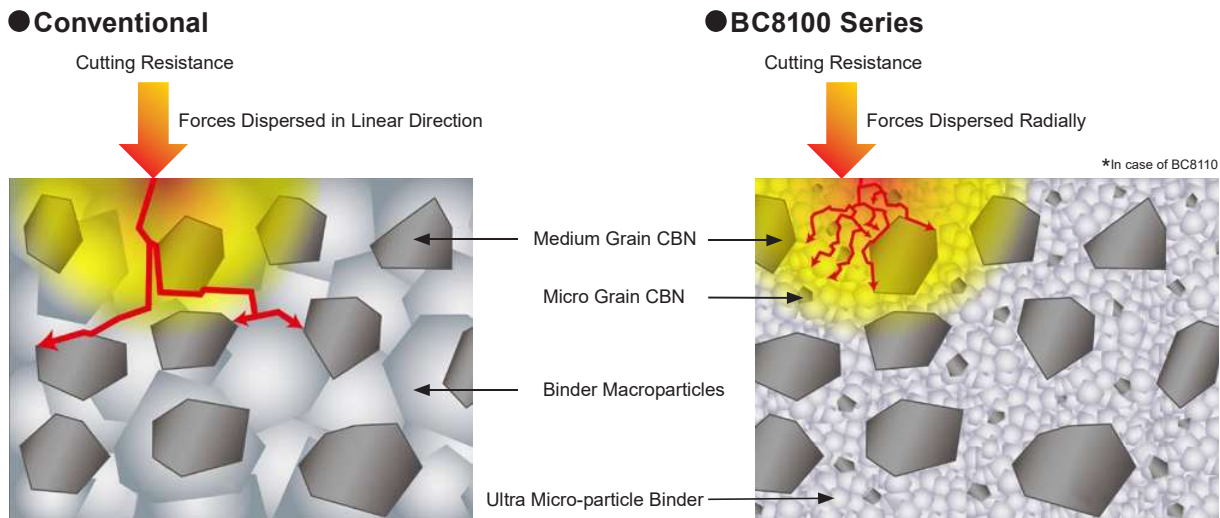
Chipping caused by built up edge is prevented with improved welding resistance. Improved wear and adhesion strength to the CBN surface.

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.

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

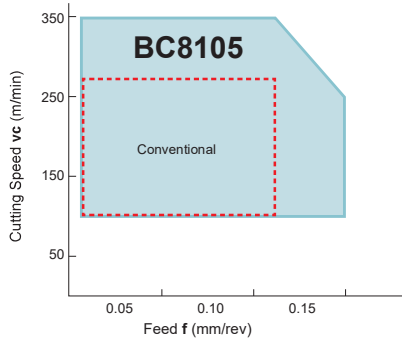
*Graphical representation.

■ The newly developed Ultra Micro-particle Binder prevents sudden fracture

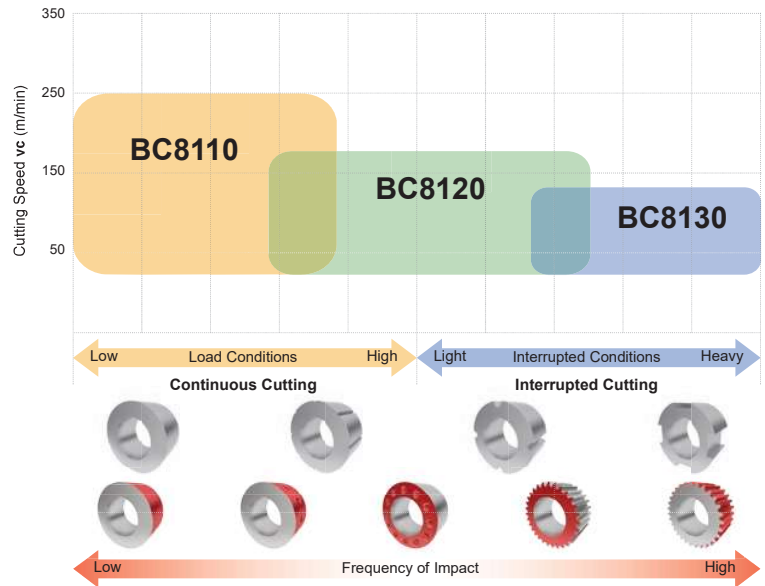


Dispersal of the newly developed Ultra Micro-particle Binder for sintered CBN and Micro Grain CBN suppresses cracking to prevent sudden fracturing.

Application range



*BC8110 is recommended to improve wear resistance.



Recommended cutting conditions

Grade	Cutting mode	Cutting Speed v_c (m/min)				Feed f (mm/rev)	Depth of Cut a_p (mm)	Cutting Mode
		50	150	250	350			
BC8105	Continuous	[Red bar from ~120 to ~280]				≤ 0.15	≤ 0.2	Dry, Wet
BC8110	Continuous	[Red bar from ~120 to ~250]				≤ 0.20	≤ 0.35	Dry, Wet
BC8120	Continuous	[Red bar from ~120 to ~220]				≤ 0.3	≤ 0.5	Dry, Wet
	Interrupted	[Red bar from ~80 to ~180]				≤ 0.2	≤ 0.3	Dry, Wet
BC8130	Interrupted	[Red bar from ~60 to ~140]				≤ 0.20	≤ 0.30	Dry, Wet

COATED CBN

BC8100 series for machining of hardened steel

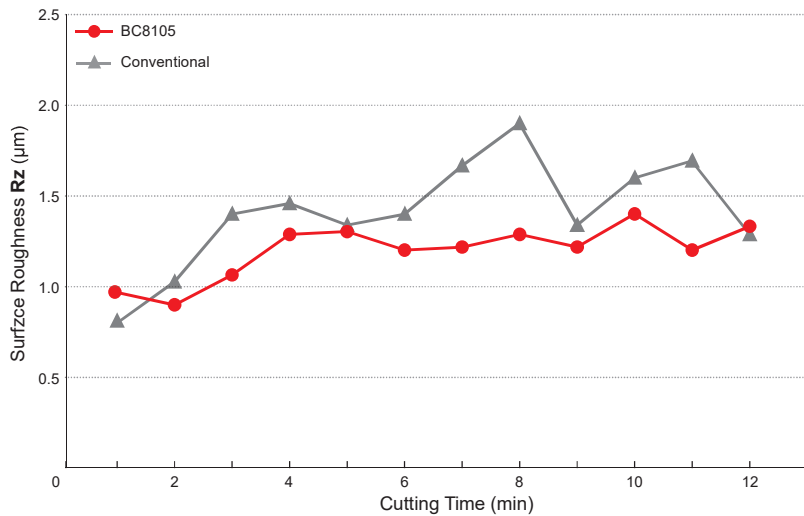
■ Cutting example and application example

B

BC8105 Highest Accuracy

Use of a CBN substrate with excellent wear resistance and chipping resistance, together with a high-lubricity coating film, controls the occurrence of boundary wear and exhibits outstanding surface roughness.

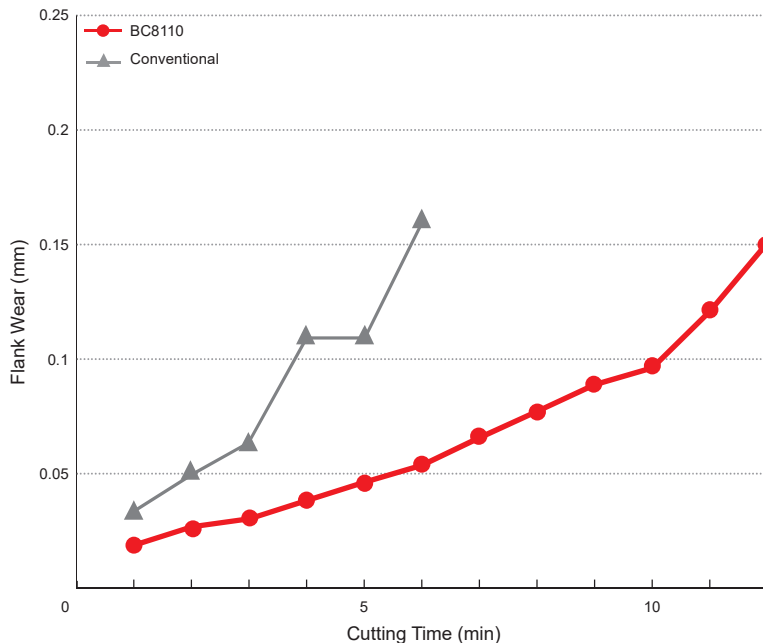
Suitable for finishing with surface roughness Ra 0.6 μm or Rz 2.4 μm or less.



Insert	NP-CNGA120408GS2
Workpiece Material	AISI 5120 (60HRC)
Machining Methods	External Continuous Cutting
Cutting Speed vc (m/min)	200
Feed f (mm/rev)	0.05
Depth of Cut ap (mm)	0.05
Cutting Mode	Dry Cutting

BC8110 High Speed Turning

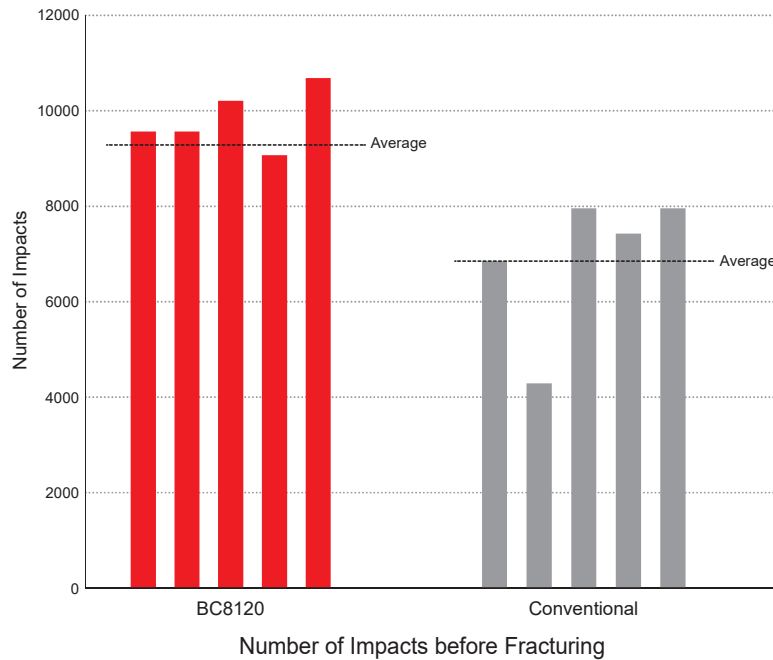
Use of a CBN substrate with excellent wear resistance and chipping resistance, together with an extremely hard coating film, provides the highest flank wear resistance of the entire BC8100 series.



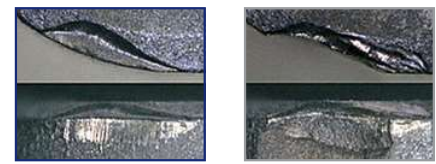
Insert	NP-CNGA120408GS2
Workpiece Material	AISI 5120 (60HRC)
Machining Methods	External Continuous Cutting
Cutting Speed vc (m/min)	250
Feed f (mm/rev)	0.10
Depth of Cut ap (mm)	0.2
Cutting Mode	Dry Cutting

BC8120 General Application

Use of a CBN substrate with excellent fracture resistance and crater wear resistance, together with a coating film having superior wear resistance, combines both fracture resistance and wear resistance while exhibiting outstanding crater wear resistance.



Cutting Edge Condition after 8000 Impacts



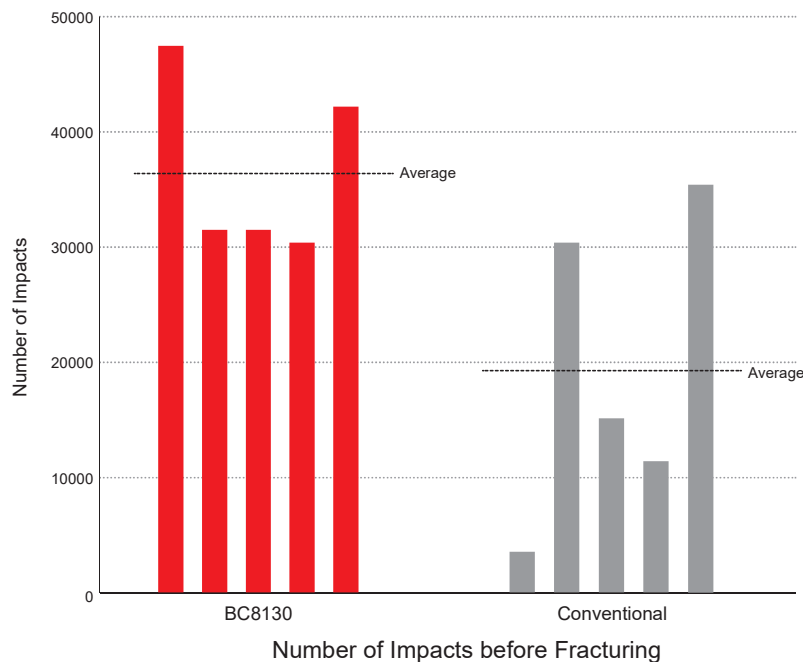
BC8120

Conventional

Insert	NP-CNGA120408GA2
Workpiece Material	AISI 5120 (60HRC)
Machining Methods	External Interrupted Cutting
Cutting Speed v_c (m/min)	250
Feed f (mm/rev)	0.15
Depth of Cut a_p (mm)	0.1
Cutting Mode	Dry Cutting

BC8130 Tough Machining

Use of a CBN substrate with excellent cutting edge strength, together with a coating film that combines hardness with impact resistance, allows it to exhibit outstanding cutting edge strength and fracture resistance.



Insert	NP-CNGA120408GA2
Workpiece Material	AISI 5120 (60HRC)
Machining Methods	External Heavy Interrupted Cutting
Cutting Speed v_c (m/min)	250
Feed f (mm/rev)	0.05
Depth of Cut a_p (mm)	0.1
Cutting Mode	Wet Cutting

NON-COATED CBN

BC8100 series for machining of hardened steel

FEATURES

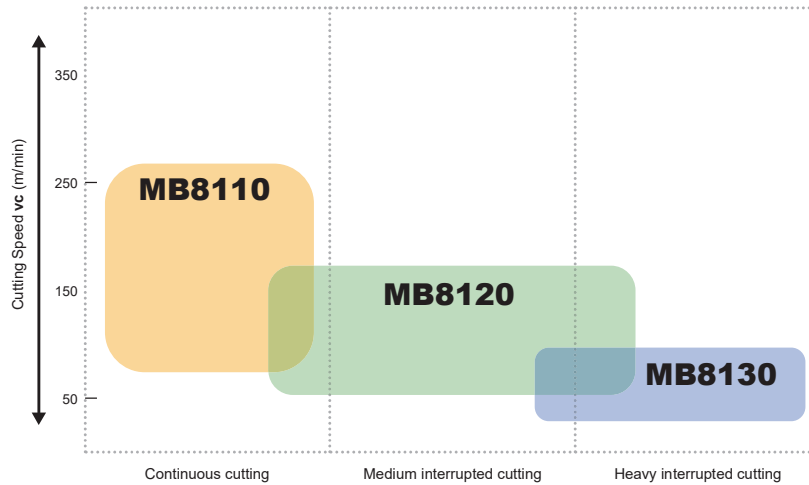
B

CBN & PCD TURNING INSERTS

The MB8100 series CBN base material uses the optimized substrate technology (see B006) applied to the BC8100 series to prevent sudden defects during cutting and achieve long life.

The MB8100 series has a lineup of MB8110 for continuous cutting, MB8120 for general cutting, and MB8130 for interrupted cutting, and can be used in a wide range of cutting applications.

Application range



Recommended cutting conditions

Grade	Cutting mode	Cutting Speed v_c (m/min)					Feed f (mm/rev)	Depth of Cut a_p (mm)	Cutting Mode	
		50	100	150	200	250				300
MB8100 Series	MB8110	Continuous	[Red bar from 150 to 225]					≤ 0.2	≤ 0.3	Dry, Wet
	MB8120	Continuous	[Red bar from 100 to 200]					≤ 0.2	≤ 0.5	Dry, Wet
		Interrupted	[Red bar from 100 to 150]					≤ 0.2	≤ 0.3	Dry, Wet
	MB8130	Interrupted	[Red bar from 100 to 125]					≤ 0.2	≤ 0.3	Dry, Wet

Application example

MB8110 Continuous cutting

Tool Life (Flank Wear)

Insert	NP-CNGA120408GA2
Workpiece Material	AISI 5120 (60HRC)
Machining Methods	External Continuous Cutting
Cutting Speed v_c (m/min)	250
Feed f (mm/rev)	0.1
Depth of Cut a_p (mm)	0.2
Cutting Mode	Dry Cutting

Cutting Edge after 180 sec.

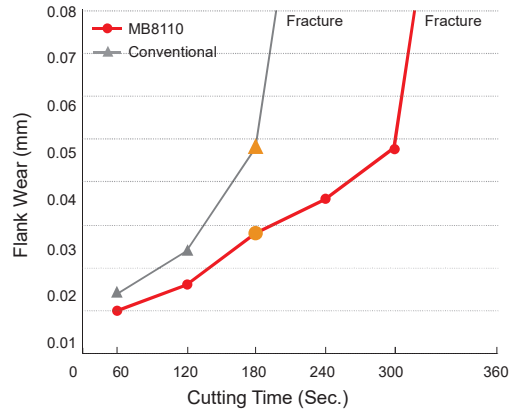


MB8110



Conventional

Large Wear



MB8120 General Application

Test of Interrupted Cutting

Insert	NP-CNGA120408GA2
Workpiece Material	AISI 5120 (60HRC)
Machining Methods	External Interrupted Cutting
Cutting Speed v_c (m/min)	250
Feed f (mm/rev)	0.15
Depth of Cut a_p (mm)	0.1
Cutting Mode	Dry Cutting

17000 Impacts

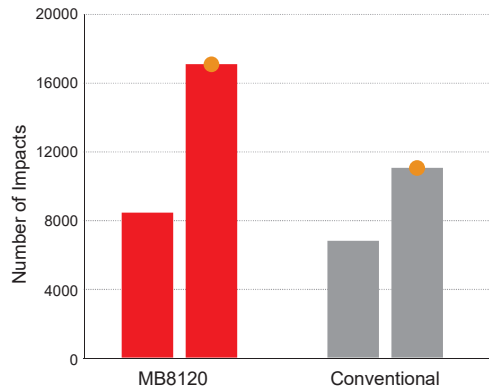


MB8120

11000 Impacts



Conventional



MB8130 Interrupted cutting

Test of Interrupted Cutting

Insert	NP-CNGA120408GA2
Workpiece Material	AISI 5120 (60HRC)
Machining Methods	External Heavy Interrupted Cutting
Cutting Speed v_c (m/min)	150
Feed f (mm/rev)	0.05
Depth of Cut a_p (mm)	0.1
Cutting Mode	Wet Cutting

77000 Impacts

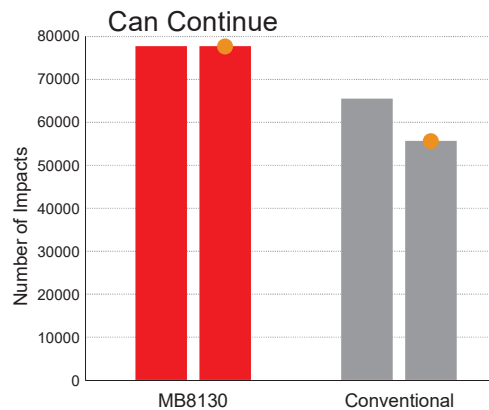


MB8130

54000 Impacts



Conventional



NON-COATED CBN

Sintered Alloy Machining • Cast Iron Machining

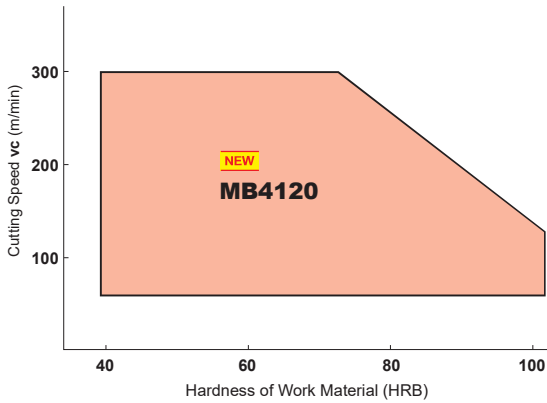
MB4120/MB710/MB730/MBS140

B

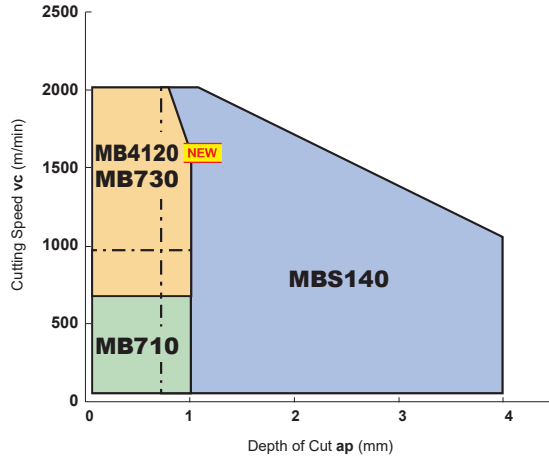
CBN & PCD TURNING INSERTS

Application Range

● Sintered Alloy Machining



● Cast Iron Machining



Recommended Cutting Conditions

● Sintered Alloy Machining

Work Material	Application range	Grade	Cutting Speed v_c (m/min)					Feed f (mm/rev)	Depth of Cut a_p (mm)	Cutting Mode
			100	150	200	250	300			
General Sintered Alloy	General Cutting	MB4120 <small>NEW</small>	[Bar from 100 to 300]					≤ 0.2	≤ 0.3	Dry, Wet
High Density Sintered Alloy	General Cutting	MB4120 <small>NEW</small>	[Bar from 100 to 200]					≤ 0.2	≤ 0.3	Dry, Wet
Sintered Alloy	General Cutting	MB4120 <small>NEW</small>	[Bar from 100 to 150]					≤ 0.2	≤ 0.3	Dry, Wet

● Cast Iron Machining

Work Material	Application range	Grade	Cutting Speed v_c (m/min)					Feed f (mm/rev)	Depth of Cut a_p (mm)	Cutting Mode
			250	500	750	1000	1250			
Gray Cast Iron JIS FC250, JIS FC300	General Cutting	MB4120 <small>NEW</small>	[Bar from 750 to 1250]					≤ 0.4	≤ 0.5	Dry, Wet
	General Cutting	MB730	[Bar from 1000 to 1250]					≤ 0.5	≤ 1.0	Dry, Wet
	General Cutting	MB710	[Bar from 500 to 1000]					≤ 0.5	≤ 1.0	Dry, Wet
	Heavy Cutting	MBS140	[Bar from 500 to 1500]					≤ 0.5	≤ 5	Dry, Wet

MB4120

● The first recommendation that can be widely used for continuous to interrupted cutting of sintered alloy and cast iron.

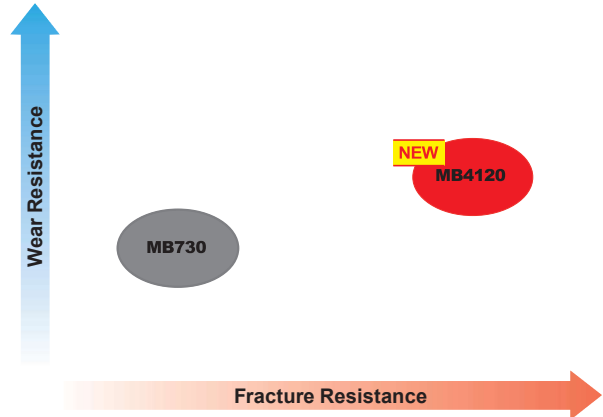
FEATURES

High Fracture Resistance

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

High Adhesion Strength of Fine CBN Particles

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

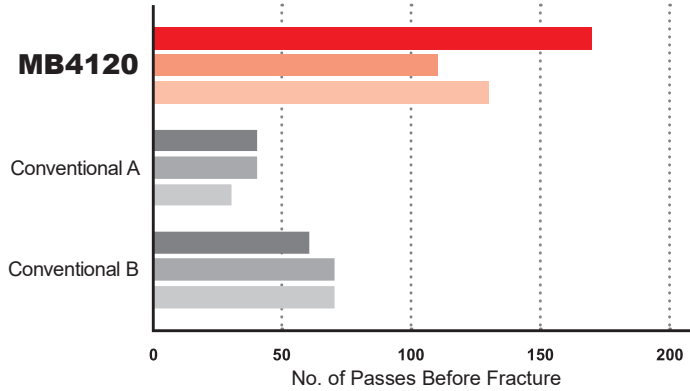


B

CBN & PCD TURNING INSERTS

Application Example

Fracture Resistance Comparison During Interrupted Facing of High Strength Sintered Alloy

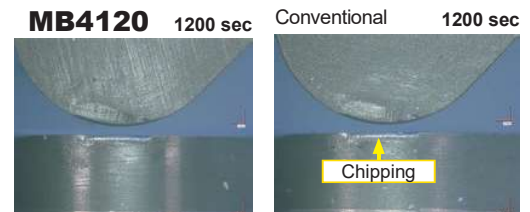
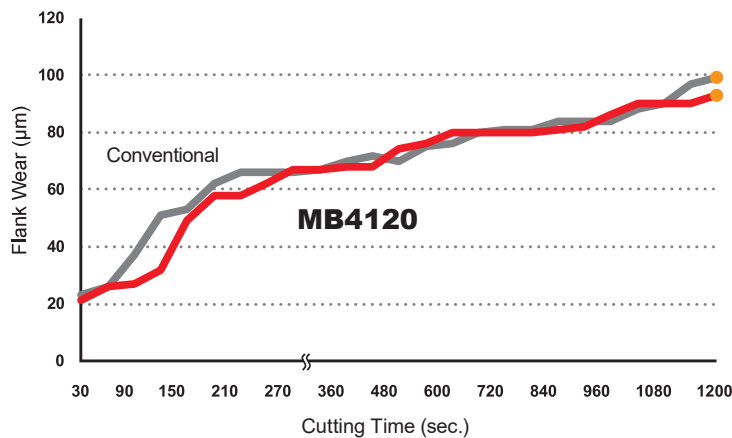


<Cutting Conditions>

Work Material : High Strength Sintered Alloy
 Insert : NP-TNGA160408SE3
 Cutting Speed : $vc=150$ m/min
 Feed : $f=0.15$ mm/rev
 Depth of Cut : $ap=0.1$ mm
 Cutting Mode : Wet Cutting

Excellent chipping resistance in interrupted face cutting of gear.

Comparison in Continuous Machining of AISI No 35 B



<Cutting Conditions>

Work Material : AISI No 35 B (Peralite)
 Insert : NP-TNGA160408SF3
 Cutting Speed : $vc=800$ m/min
 Feed : $f=0.1$ mm/rev
 Depth of Cut : $ap=0.2$ mm
 Cutting Mode : Dry Cutting

It has excellent fracture resistance as compared to conventional products.

SOLID CBN

Cast Iron Machining **MBS140**

FEATURES

B

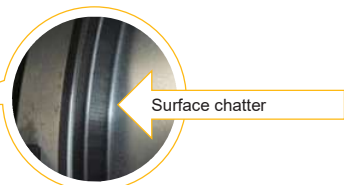
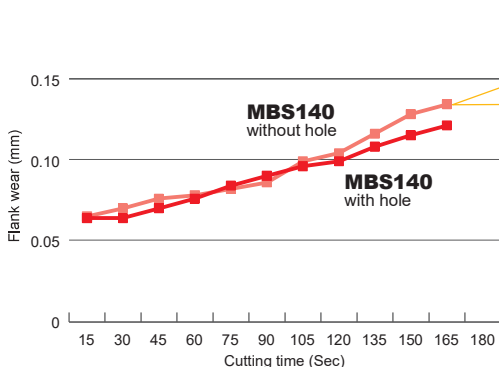
Supports high-efficiency machining with large depths of cut.

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

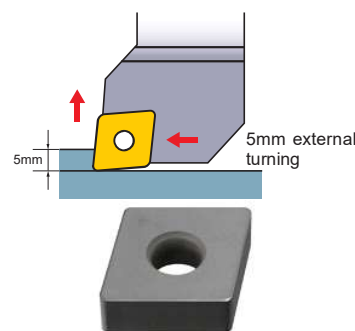
Use of micro-grain CBN with a newly-developed special binder provides high wear resistance.

Use of Mitsubishi's original high-efficiency sintering technology provides high fracture resistance and supports machining with large depths of cut.



<Cutting Conditions>
 Workpiece : FC250 (DIN GG25)
 Insert : CNGA120408/CNGN120408
 Holder : Double Clamp Holder
 Cutting Speed : $v_c=400$ m/min
 Feed : $f=0.05$ mm/rev
 Depth of Cut : $a_p=5.0$ mm
 Cutting Mode : Wet Cutting

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



CBN

FOR CYLINDER LINER **MB5015**

*Produce to order only.

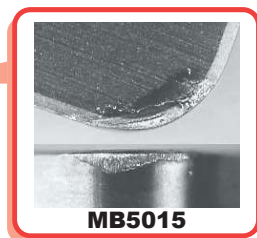
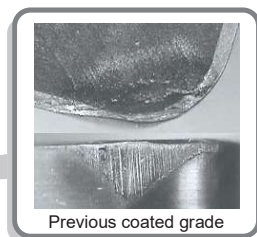
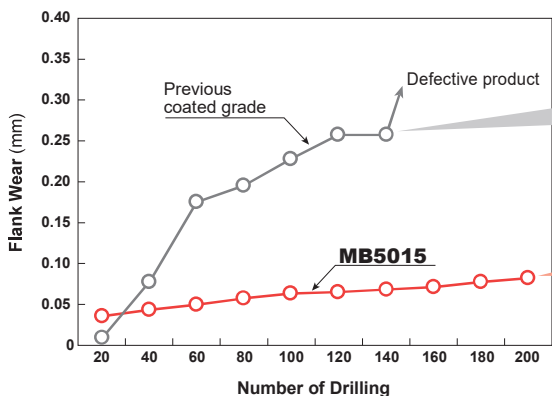
FEATURES

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

Recommended Cutting Conditions

Work Material	Cutting Mode	Cutting Speed v_c (m/min)				Feed f (mm/rev)	Depth of Cut a_p (mm)	Cutting Mode
		100	500	1000	1500			
Centrifugal casting	Cast Iron	----- ----- ----- -----				-0.3(Finishing) -0.8(Semi-finishing)	-0.05(Finishing) -0.2(Semi-finishing)	Wet Cutting

Cutting Performance



<Cutting Conditions>
 Workpiece : FC200 (Centrifugal casting) $\phi 63.0$
 Cutting Speed : $v_c=800$ m/min Feed : $f=0.35$ mm/rev Depth of Cut : $a_p=0.03$ mm
 Work : Centrifugal casting Cylinder liner Hole Depth : 100mm

CBN

- Suitable for high speed finishing of heat treated steel, sintered ferrous alloy and cast iron.
- Low affinity to iron, thus good surface finishes are possible.
- Grinding can be replaced by machining.



B

CBN & PCD TURNING INSERTS

● Heat Treated Steel

Work Material	Type	Cutting Mode	Recommended Grade	Recommended Cutting Conditions			
				Cutting Speed v_c (m/min)	Feed f (mm/rev)	Depth of Cut a_p (mm)	Cutting Mode
Structural Steel Esp. Carburized Steel (SC, SCM, SCr) High Alloy Steel (SKD, SKH)	Coated	High speed finishing cutting	BC8105	250 (100–350)	≤ 0.15	≤ 0.2	Dry, Wet
		Continuous cutting for general purpose	BC8110	200 (100–300)	≤ 0.2	≤ 0.35	Dry, Wet
			BC8120	200 (100–230)	≤ 0.3	≤ 0.8	Dry, Wet
		Medium interrupted cutting	BC8120	150 (60–200)	≤ 0.2	≤ 0.3	Dry, Wet
	Interrupted cutting	BC8130	120 (60–150)	≤ 0.2	≤ 0.3	Dry, Wet	
	Non-coated	Continuous cutting for general purpose	NEW MB8110	200 (100–250)	≤ 0.2	≤ 0.3	Dry, Wet
			NEW MB8120	150 (80–220)	≤ 0.2	≤ 0.5	Dry, Wet
		Medium interrupted cutting	NEW MB8120	130 (85–180)	≤ 0.2	≤ 0.3	Dry, Wet
Interrupted cutting		NEW MB8130	100 (60–150)	≤ 0.2	≤ 0.3	Dry, Wet	

● Cast Iron

Work Material	Workpiece Structure	Cutting Speed v_c (m/min)					Feed f (mm/rev)	Depth of Cut a_p (mm)	Cutting Mode
		250	500	750	1000	1250			
Gray Cast Iron	Ferritic + Pearlitic	MBS140					–0.5	–1.0	Dry, Wet
	Pearlitic								
Alloy Cast Iron	Pearlitic	MB4120 NEW					–0.4	–0.5	Dry, Wet
Ductile Cast Iron	Ferritic	MB710					–0.4	–0.5	Dry, Wet
	Ferritic + Pearlitic	MB730							

● Sintered Alloy

Work Material	Recommended Grade	Recommended Cutting Conditions		
		Cutting Speed v_c (m/min)	Feed f (mm/rev)	Depth of Cut a_p (mm)
General Sintered Alloy	NEW MB4120	180 (80–300)	–0.2	–0.3
High Density Sintered Alloy	NEW MB4120	150 (80–230)	–0.2	–0.3
Sintered Alloy	NEW MB4120	130 (80–180)	–0.2	–0.3

● Valve Seat

Amount of Hard Particles	None or Small	←————→		Large
Hardness of Workpiece (HV)	150	250	300	350
Plunge Cut	NEW MB4120, MB4020		MB825	MB835
Traverse Cut	NEW MB4120, MB4020		MB710	MB825

● Roll

Work Material	Grade	Recommended Cutting Conditions		
		Cutting Speed v_c (m/min)	Feed f (mm/rev)	Depth of Cut a_p (mm)
Cast Steel Adamite Cast Steel	MB8025	80 (30–130)	0.3 (0.1–0.5)	0.2–3.0
Ductile Cast Iron Granular Cast Iron Chilled Cast Iron	MB710	80 (30–130)	0.3 (0.1–0.5)	0.2–3.0
High Chromium Steel High Alloy Steel	MB8025	80 (30–130)	0.3 (0.1–0.5)	0.2–3.0
High Speed Steel	MB730	50 (20–70)	0.25 (0.1–0.4)	0.1–3.0
Cemented Carbide	MB730, MBS140	20 (10–30)	–0.2	–0.2

● Heat Resistant Alloy

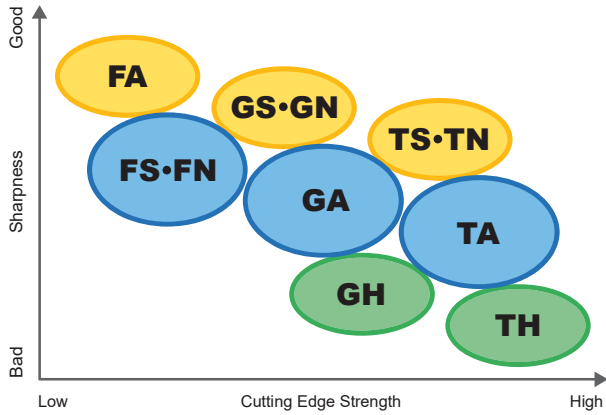
Work Material	Grade	Recommended Cutting Conditions		
		Cutting Speed v_c (m/min)	Feed f (mm/rev)	Depth of Cut a_p (mm)
Ni Base Heat Resistant Alloy (e.g. Inconel)	MB730, MB8025	120 (100–150)	–0.2	–0.5
Co Base Heat Resistant Alloy (e.g. Stellite)	MB730, MB8025	70 (50–100)	–0.2	–0.5

HONING

Honing for Machining Hardened Steel

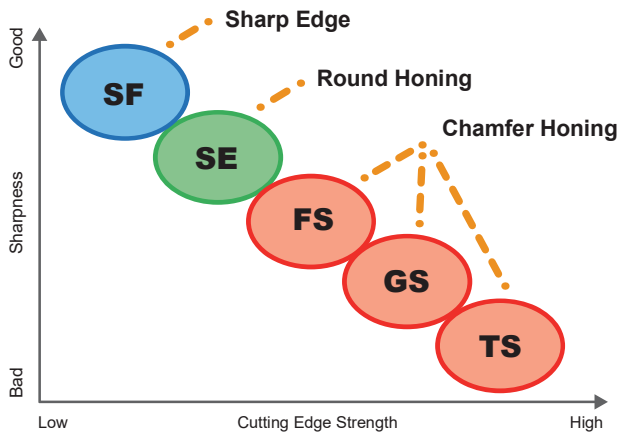
B

CBN & PCD TURNING INSERTS



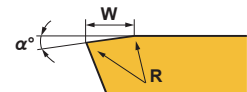
- **General cutting**
 - GA Honing : General machining
 - GS Honing : Vibration and burr control
 - GN Honing : If the crater wear is large.
 - GH Honing : For depths of cut of 0.15 or greater
- **Continuous cutting, Stable cutting**
 - FS Honing : General machining
 - FA Honing : For improved biting compared to FS
 - FN Honing : if the crater wear is large.
- **Medium and heavy interrupted cutting, Unstable cutting**
 - TA Honing : General machining
 - TS Honing : Vibration and burr control
 - TN Honing : If the crater wear is large.
 - TH Honing : For depths of cut of 0.15 or greater

Honing for Machining Sintered Alloys



- **Continuous cutting, Stable cutting**
 - FS Honing : Continuous cutting, General machining
- **Medium and heavy interrupted cutting, Unstable cutting**
 - GS, TS Honing : If fracturing occurs at the blade edge during interrupted cutting
- **Focus on high-precision cutting, dimensional precision, and surface roughness**
 - SF Honing : Focus on finished surface roughness
 - SE Honing : If chipping occurs

NP-CNGA120408-G A 2



Main Application G A Edge Honing Type

(mm)

	A			S			N			H			F			E		
	General			Vibration and burr control			Crater wear control			High efficiency			Focus on dimensional precision			Chipping control		
	α	W	R	α	W	R	α	W	R	α	W	R	α	W	R	α	W	R
F Continuous cutting	15°	0.1	0	15°	0.1	0.01	15°	0.05	0.01	—	—	—	—	—	—	—	—	—
G General cutting	25°	0.13	0.03	25°	0.13	0.01	25°	0.05	0.01	25°	0.27	0.03	—	—	—	—	—	—
T Interrupted cutting	35°	0.13	0.03	35°	0.13	0.01	35°	0.05	0.01	35°	0.27	0.03	—	—	—	—	—	—
S High-precision cutting	—	—	—	—	—	—	—	—	—	—	—	—	0°	0	0	0°	0	0.01

Conventional honing shapes

F honing : 0.1mm×15°+R0

G honing : 0.13mm×25°+R0.03

T honing : 0.13mm×35°+R0.03

CBN BREAKER INSERT

FEATURES

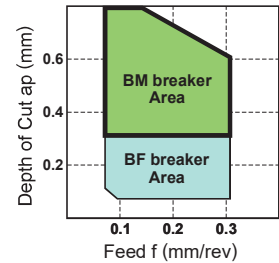
Chip Breaker Geometry Designed for Excellent Chip Control

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



B

CBN & PCD TURNING INSERTS

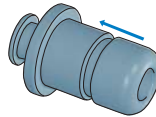
BM Breaker (Deep shoulder Turning) ● Cutting Performance



Good for deep depth cutting of carburized layer.

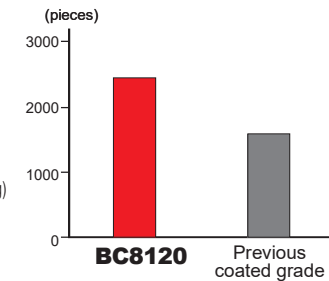
Recommend and under $a_p=0.6\text{mm}$

Available in BC8120 grade.



<Cutting Conditions>

Workpiece : AISI 4142 (56-59HRC)
 Component : Counter shaft (External interrupted cutting)
 Insert : BM-DNGM150608TA2
 Cutting Speed : $v_c = 170\text{m/min}$
 Feed : $f = 0.15\text{mm/rev}$
 Depth of Cut : $a_p = 0.07 - 0.10\text{mm}$
 Cutting Mode : Wet Cutting



BC8120 achieved 1.5X longer tool life.

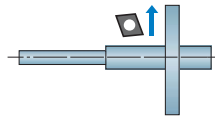
BF Breaker (Light cutting depth) ● Cutting Performance



Good for chip removal under light depth and feed cutting.

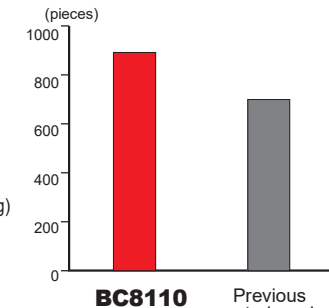
Recommend and under $a_p=0.3\text{mm}$

Available in BC8110 grade.



<Cutting Conditions>

Workpiece : SCr420H (61-65HRC)
 Component : Clutch shaft (Continuous facing)
 Cutting Speed : $v_c = 150\text{m/min}$
 Feed : $f = 0.12\text{mm/rev}$
 Depth of Cut : $a_p = 0.15\text{mm}$
 Wet Cutting



BC8110 achieved 1.3X longer tool life.

MULTI-CORNER TYPE INSERTS

● A single sided, multi-corner type insert has no cutting edges on the underside.

Double Sided, multi-corner type insert, ex.

NP-CNGA120408GA4

No. of Cutting Edge Corners $\overline{\hspace{1.5cm}}$

Single Sided, multi-corner type insert, ex.

NP-CNGA120408GA2

No. of Cutting Edge Corners $\overline{\hspace{1.5cm}}$

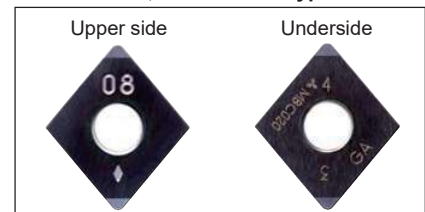
10-INSERTS PACKS

Two types of packs for **MB8025** Multi-corner type inserts, are available, a single insert pack and a ten insert pack. For easy storage.

TNP-CNGA120404G2

$\overline{\hspace{1.5cm}}$ 10-Insert Pack Symbol

Double sided, Multi-corner type insert



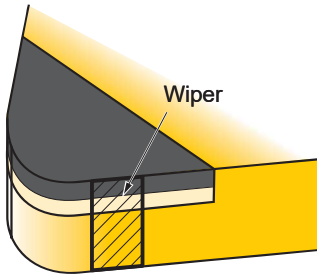
10-Insert Pack



WIPER INSERT

FEATURES

B
CBN & PCD TURNING INSERTS



Improving Surface Finish

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

Improving Efficiency

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

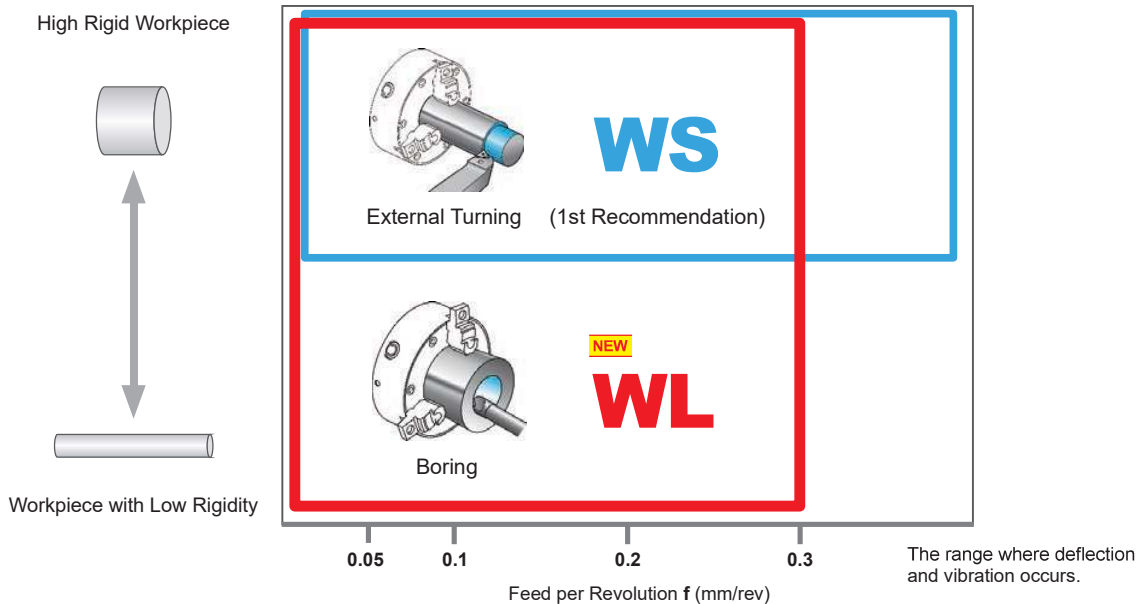
Increased Tool Life

When a change 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.

Improving Chip Control

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

Application of Wiper Inserts



NEW WL Wiper Insert

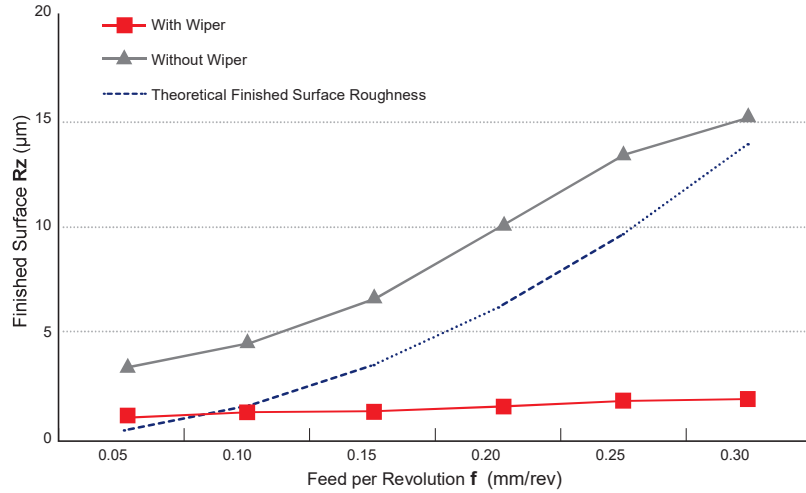
Preventing the cutting edge from vibration during boring and turning of small diameter workpieces as well as providing excellent finish surface roughness.



The Optimum Wiper Width
Applying slight slope on the wiper cutting edge reduces cutting resistance.

Cutting Performance

WL Wiper (External Turning)

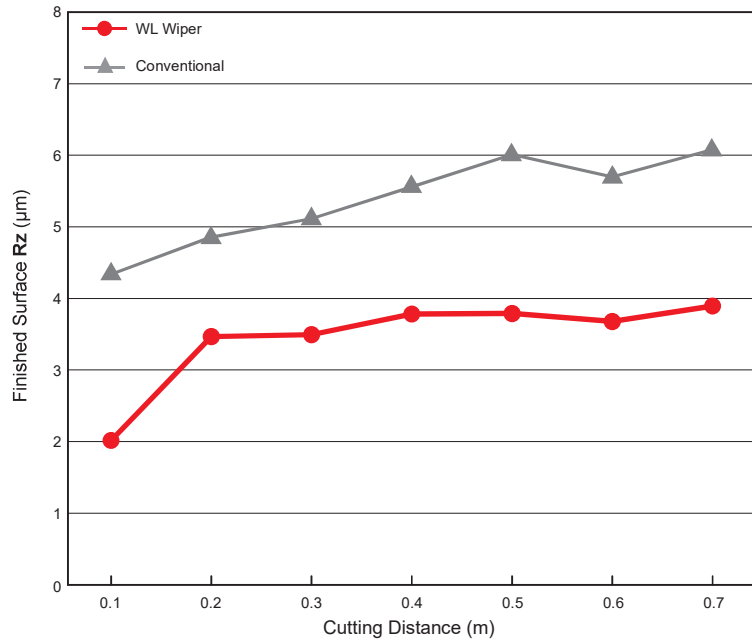


<Cutting Conditions>

Workpiece Material : Hardened Steel (60HRC)
 Insert : NP-CNGA120408
 Machining Methods : Continuous
 Cutting Speed : $v_c = 120\text{m/min}$
 Depth of Cut : $a_p = 0.1\text{mm}$
 Cutting Mode : Dry Cutting

NEW

WL Wiper (Boring)



<Cutting Conditions>

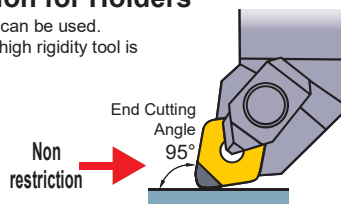
Workpiece Material : SCr415 (60HRC)
 Insert : NP-CNGA120408FBWL2
 Machining Methods : Continuous
 Cutting Speed : $v_c = 160\text{m/min}$
 Feed : $f = 0.3\text{mm/rev}$
 Depth of Cut : $a_p = 0.1\text{mm}$
 Cutting Mode : Dry Cutting

Stable surface finish is maintained even in unstable cutting.

Notes for Use

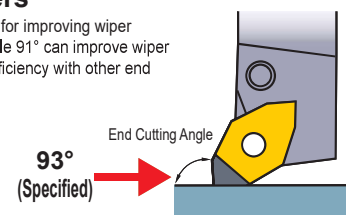
No Restriction for Holders

A standard holders can be used.
 (*A double clamp, high rigidity tool is recommended.)



Restriction for Holders

Use a holder with end cutting angle 93° for improving wiper efficiency. A holder with end cutting angle 91° can improve wiper efficiency, however, there is no wiper efficiency with other end cutting angles ($60^\circ, 90^\circ, 107^\circ$ etc.).



CBN GROOVING SERIES (GY/MG)

FEATURES

A combination 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 despite being a 2-piece type. MG has a wide insert location face for high gripping force. A combination with these holders allows it to deliver excellent performance when grooving hardened steel.

BC8110 coated materials for continuous machining of hardened steel have been added to GY inserts.

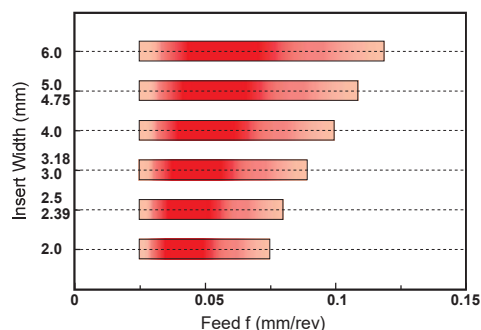
BC8110 materials with excellent wear resistance have been added. Compared to conventional materials, they display excellent wear resistance to achieve long tool life. A blade width of 6.0 has also been added to the lineup of BC8110.



CBN & PCD TURNING INSERTS

B

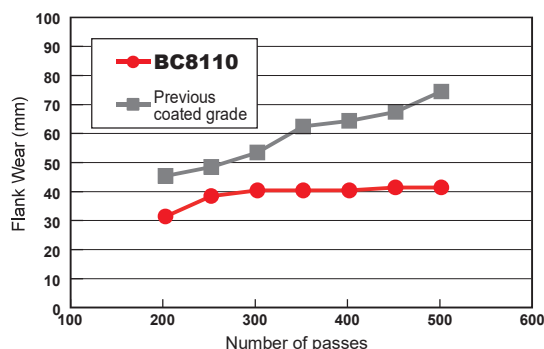
Recommended Cutting Conditions



Work Material	Hardness	Grade	Cutting Speed vc (m/min)	Cutting Mode
H Hardened Steel	35—65HRC	BC8110 MB8025	100 (60—120)	Dry, Wet

Cutting Performance

Tool life evaluation for the GY holder



<Cutting Conditions>

Insert : GY1G0200D020N-GFGS
 Workpiece : SCr420 (60HRC)
 Cutting Speed : vc=120 m/min
 Feed : f=0.1 mm/rev
 Depth of Cut : ap=0.3 mm
 Cutting Mode : Dry Cutting

Application Example

Insert	GY1G0300F020N-GFGS (Grade : BC8110)	
Workpiece	<p>SNCM230H (58—62HRC)</p>	
Component	Input shaft	
Cutting Conditions	Cutting Speed vc (m/min)	130
	Feed f (mm/rev)	0.1
Result	<p>Tool life over twice as long as conventional products</p>	

PCD (SINTERED DIAMOND)

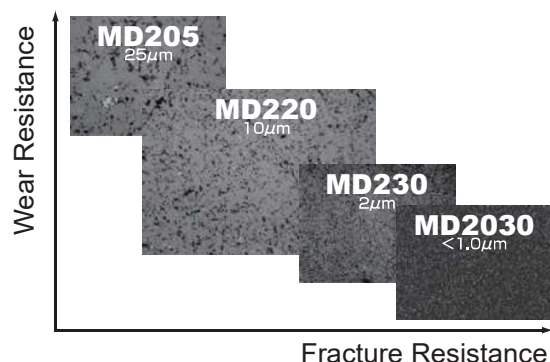
- Suitable for materials such as aluminium alloy, non-ferrous metals, and fibre strengthened plastic.
- Suitable for extremely high speed finishing.



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CBN & PCD TURNING INSERTS

FEATURES



Grade	Features
MD205	For Continuous Cutting 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	For Interrupted Cutting 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.
MD2030	For Heavy Interrupted Cutting Strong sintering of ultra micro-grain PCD particles provides exceptional fracture resistance. Chipping during high-speed finish turning can be controlled.

SELECTION STANDARD

TURNING

Work Material	Recommended Grade			Recommended Cutting Conditions		
	MD205	MD220	MD2030	Cutting Speed v_c (m/min)	Feed f (mm/rev)	Depth of Cut a_p (mm)
Aluminium Alloy ($Si \leq 12\%$)		◎	○	800 (200—1200)	—0.2	—1.0
Aluminium Alloy ($Si \geq 13\%$)	◎	○		600 (200—1000)	—0.2	—1.0
Copper Alloy		◎		700 (200—1200)	—0.2	—1.0
Strengthened Plastic		◎		600 (100—1000)	—0.4	—1.0
Glass Fibre Reinforced Plastic		◎		500 (100—800)	—0.25	—1.0
Carbon	○	◎		400 (100—600)	—0.3	—1.0
Ceramics		○		50 (30—80)	—0.1	—1.0
Hard Rubber		◎		600 (300—800)	—0.15	—1.0
Wood Inorganic Board		◎		1300 (300—4000)	—0.4	—
Cemented Carbide	◎	○		15 (5—20)	—0.2	—0.5

Note1) ◎ : 1st recommendation. ○ : 2nd recommendation

Note2) Not suitable for steel.


































NEW PETIT CUT INSERT SERIES

- **Economical** Low cost is achieved by reducing the area of the diamond sintered body. In addition, tool management is economical because regrinding is unnecessary.
- **With Breaker** Chip breaker formed directly on the PCD portion delivers superior chip control.
- Corner R0.05mm inserts are available, making it suitable for the machining of small work corner radii.

CLASSIFICATION




















NEGATIVE INSERTS WITH HOLE

B
CBN & PCD TURNING INSERTS

Product Name	Type	Tolerance	Breaker Name and Cross Section	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	
NEW PETIT CUT	Multi-corner Type Double Sided	G	Flat Top	NP-CNGA_04  ↻ B028	NP-DNGA_04  ↻ B032	NP-SNGA_04  ↻ B037	NP-TNGA_06  ↻ B039	NP-VNGA_04  ↻ B042	NP-WNGA_06  ↻ B044	
	Multi-corner Type Double Sided With Wiper		Flat Top	NP-CNGA_0WS4  ↻ B028						
	Multi-corner Type Double Sided With Breaker		BF	BF-CNGG_04  ↻ B028	BF-DNGG_04  ↻ B033					
	Multi-corner Type Double Sided With Breaker	M	Flat Top	NP-CNGA_02*  ↻ B029	NP-DNGA_02*  ↻ B033	NP-SNGA_02*  ↻ B037	NP-TNGA_03*  ↻ B039	NP-VNGA_02*  ↻ B042	NP-WNGA_03  ↻ B044	
	Multi-corner Type Single Sided With Wiper		Flat Top	NP-CNGA_0WS2  ↻ B030	NP-DNGA_0WS2J_R/L  ↻ B035					NP-WNGA_0WS3  ↻ B044
	Multi-corner Type Single Sided With Breaker		BF	BF-CNGM_02  ↻ B030	BF-DNGM_02  ↻ B035					
	Multi-corner Type Single Sided With Breaker	M	BM	BM-CNGM_02  ↻ B030	BM-DNGM_02  ↻ B035		BM-TNGM_03  ↻ B040			
	One-corner Type Single Sided		Flat Top	NP-CNMA_0  ↻ B031	NP-DNMA_0  ↻ B036	NP-SNMA_0  ↻ B038	NP-TNMA_0  ↻ B040	NP-VNMA_0  ↻ B043		
	One-corner Type Single Sided With Breaker		R/L-F	NP-CNMM_R/L-F  ↻ B068	NP-DNMM_R/L-F  ↻ B068	NP-SNMM_R/L-F  ↻ B069	NP-TNMM_R/L-F  ↻ B069	NP-VNMM_R/L-F  ↻ B070		

Note1) Two types of packs for ★ type inserts, pack of single insert and pack of ten inserts, are available. (The single pack is standard.) Please refer to the "Standard of inserts".










NEGATIVE INSERTS WITH HOLE

Product Name	Type	Tolerance	Breaker Name and Cross Section	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°
STANDARD	Multi-corner Type Double Sided (Solid CBN)	G	Flat Top 	 CNGA  ↻ B031		 SNGA  ↻ B038	 TNGA  ↻ B041		
	One-corner Type Single Sided	M	Flat Top 	 CNMA  ↻ B031, B068					
	One-corner Type Single Sided	G	Flat Top 		 DNGA  ↻ B036, B068	 SNGA  ↻ B038, B069	 TNGA  ↻ B041, B069	 VNGA  ↻ B043, B070	

B

CBN & PCD TURNING INSERTS

5° POSITIVE INSERTS WITH HOLE

Product Name	Type	Tolerance	Breaker Name and Cross Section	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°
NEW PETIT CUT	Multi-corner Type Single Sided	G	Flat Top 					 NP-VBGW_02  ↻ B061	
	One-corner Type Single Sided		Flat Top 					 NP-VBGW_01  ↻ B062	
	One-corner Type Single Sided With Breaker		R-F 					 NP-VBGT_R-F  ↻ B077	

CLASSIFICATION

























7° POSITIVE INSERTS WITH HOLE

B
CBN & PCD TURNING INSERTS

Product Name	Type	Tolerance	Breaker Name and Cross Section	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°
NEW PETIT CUT	Multi-corner Type Single Sided	G	Flat Top	NP-CCGW/B_02 ↻ B049	NP-DCGW_02 ↻ B054		NP-TCGW_03 ↻ B057	NP-VCGW_02 ↻ B062	
	Multi-corner Type Single Sided With Wiper		Flat Top	NP-CCGW_CW_02 ↻ B050					
	Multi-corner Type Single Sided With Breaker		BF	BF-CCGT_02 ↻ B051	BF-DCGT_02 ↻ B055				
	Multi-corner Type Single Sided With Breaker		BM	BM-CCGT_02 ↻ B051	BM-DCGT_02 ↻ B055				
	One-corner Type Single Sided	M	Flat Top	NP-CCMB_01 ↻ B051					
	One-corner Type Single Sided With Breaker		Standard	NP-CCMH ↻ B072					
	One-corner Type Single Sided	G	Flat Top	NP-CCGW_01 ↻ B051	NP-DCGW_01 ↻ B056				
	One-corner Type Single Sided	M	Flat Top	NP-CCMW_01 ↻ B052	NP-DCMW_01 ↻ B056				NP-WCMW_01 ↻ B063
	One-corner Type Single Sided		Flat Top	NP-CCMW ↻ B072					
	One-corner Type Single Sided With Breaker		R/L-F		NP-DCMT_R/L-F ↻ B073				
One-corner Type Single Sided With Breaker	G	R-F					NP-VCGT_R-F ↻ B077		
STANDARD	Multi-corner Type Single Sided	G	Flat Top	CCGW ↻ B052	DCGW ↻ B056		TCGW ↻ B057		
	One-corner Type Single Sided	M	Flat Top	CCMW ↻ B052, B072	DCMW ↻ B056, B073		TCMW TCGW ↻ B057, B074		WCMW ↻ B078

Note1) Two types of packs for * type inserts, pack of single insert and pack of ten inserts, are available. (The single pack is standard.) Please refer to the "Standard of inserts".

11° POSITIVE INSERTS WITH HOLE

Product Name	Type	Tolerance	Breaker Name and Cross Section	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	
NEW PETIT CUT	Multi-corner Type Single Sided	G	Flat Top 	NP-CPGB_02  ↻ B053			NP-TPGB_03  ↻ B058			
	Multi-corner Type Single Sided	G	Flat Top 				NP-TPGX_03  ↻ B059			
	One-corner Type Single Sided	M	Flat Top 	NP-CPMB_0  ↻ B053				NP-TPMB_0  ↻ B059		
	One-corner Type Single Sided With Breaker	M	Standard 	NP-CPMH  ↻ B072						
	One-corner Type Single Sided	G	Flat Top 					NP-TPGX_0  ↻ B059		
	One-corner Type Single Sided With Breaker	M	R/L-F 					NP-TPMX_R/L-F  ↻ B075		
	One-corner Type Single Sided With Breaker	M	R/L-F 					NP-TPMH_R/L-F  ↻ B075		
STANDARD	One-corner Type Single Sided With Breaker	G	Standard 	CPGT  ↻ B072					WPGT  ↻ B078	
	One-corner Type Single Sided	G	Flat Top 			SPGX  ↻ B073	TPGX  ↻ B060, B076			
	One-corner Type Single Sided With Breaker	G	R/L-F 				TPGT/V_R/L-F  ↻ B075, B076			

B



CBN & PCD TURNING INSERTS

CLASSIFICATION







CBN & PCD TURNING INSERTS

B








15° POSITIVE INSERTS WITH HOLE

Type	Tolerance	Breaker Name and Cross Section	Rhombic 35°
One-corner Type Single Sided (For Aluminium) (With Breaker)	G	R/L 	VDGX_R/L-F  ⊕ B080


20° POSITIVE INSERTS WITH HOLE

Type	Tolerance	Breaker Name and Cross Section	Rhombic 55°	Triangular 60°
One-corner Type Single Sided (For Aluminium) (With Breaker)	G	R/L 		TEGX_R/L  ⊕ B079
One-corner Type Single Sided (For Aluminium) (With Breaker)		R/L-F 	DEGX_R/L-F  ⊕ B079	
One-corner Type Single Sided (For Aluminium)		Flat Top 		TEGX  ⊕ B079



NEGATIVE INSERTS WITHOUT HOLE

Type	Tolerance	Breaker Name and Cross Section	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Round
One-corner Type Single Sided	G	Flat Top			SNGN  ⊕ B047, B071	TNGN  ⊕ B048	
Multi-corner Type Double Sided (Solid CBN)		Flat Top	CNGN  ⊕ B045	DNGN  ⊕ B045	SNGN  ⊕ B047	TNGN  ⊕ B048	RNGN  ⊕ B046




5° POSITIVE INSERTS WITHOUT HOLE




Type	Tolerance	Breaker Name and Cross Section	Triangular 60°
Multi-corner Type Single Sided	G	Flat Top	TBGN  ⊕ B065

11° POSITIVE INSERTS WITHOUT HOLE

Type	Tolerance	Breaker Name and Cross Section	Square 90°	Triangular 60°
One-corner Type Single Sided	G	Flat Top	SPGN  ⊕ B064, B081	TPGN  ⊕ B065, B081

SPECIAL PURPOSE INSERTS

Tool Holder Type	Tolerance	Inserts
GY Type	G	GY_GFGS  ⊕ B066
MG Type		MGTR  ⊕ B067
TL Type		RTG-A 
		⊕ B063

Work Material	H	Hardened Materials	● ○ ✖													Cutting Conditions (Guide) :					Geometry	Applicable Holder Page					
	K	Cast Iron	● ○ ✖													● : Stable Cutting ○ : General Cutting ✖ : Unstable Cutting											
Shape	S	Heat-resistant Alloy, Titanium Alloy	● ○ ✖													Honing (Last letter of order number) : Refer to page B016.					IC	S	RE	LE	D1	C008 C009 E013 E036 E041 H006 -008	
	Sintered Alloy	Coated CBN	CBN					Solid CBN	Dimensions (mm)																		
			BC8105	BC8110	BC8120	BC8130	MBC010	MBC020	MB8110	NEW MB8120	MB8130	MB8025	MB8810	MB8825	MB8835	NEW MB84120	MB4020	MB710	MB730	MB5140							
NEW PETIT CUT 	NP-CNMA120404GS																										
	NP-CNMA120408GS																										
	NP-CNMA120412GS																										
	NP-CNMA120404F										□ ▲																
	NP-CNMA120408F										□ ▲																
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CBN TURNING INSERTS

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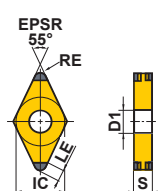
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CBN TURNING INSERTS [NEGATIVE]

55° DN TYPE INSERTS WITH HOLE

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CBN TURNING INSERTS

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Work Material	H	Hardened Materials	Cutting Conditions (Guide) :														Dimensions (mm)					Geometry	Applicable Holder Page					
	K	Cast Iron	● : Stable Cutting ● : General Cutting ✖ : Unstable Cutting														IC	S	RE	LE	D1							
Shape	S	Heat-resistant Alloy, Titanium Alloy	Coated CBN		CBN										Solid CBN	Dimensions (mm)					Geometry	Applicable Holder Page						
		Sintered Alloy	BC8105	BC8110	BC8120	BC8130	MBC010	MBC020	MB8110	MB8120	MB8130	MB8025	MB810	MB825	MB835	MB4120	MB4020	MB710	MB730	MBS140			IC	S	RE	LE	D1	Geometry
NEW PETIT CUT			●	●	●			●													12.7	4.76	0.4	2.1	5.16		C010 C011 E013 E036 -041 H009 -011	
	NP-DNGA150404FS4	●	●	●			●														12.7	4.76	0.8	2.0	5.16			
	NP-DNGA150408FS4	●	●	●			●															12.7	4.76	1.2	1.9			5.16
	NP-DNGA150412FS4	●	●	●			●															12.7	6.35	0.4	2.1			5.16
	NP-DNGA150604FS4	●	●	●			●															12.7	6.35	0.8	2.0			5.16
	NP-DNGA150608FS4	●	●	●			●															12.7	6.35	1.2	1.9			5.16
	NP-DNGA150612FS4	●	●	●			●															12.7	6.35	0.4	2.1			5.16
	NP-DNGA150404GS4	●	●	●																		12.7	4.76	0.8	2.0			5.16
	NP-DNGA150408GS4	●	●	●																		12.7	4.76	1.2	1.9			5.16
	NP-DNGA150412GS4	●	●	●																		12.7	6.35	0.4	2.1			5.16
	NP-DNGA150604GS4	●	●	●																		12.7	6.35	0.8	2.0			5.16
	NP-DNGA150608GS4	●	●	●																		12.7	6.35	1.2	1.9			5.16
	NP-DNGA150612GS4	●	●	●																		12.7	6.35	0.4	2.1			5.16
	NP-DNGA150404GA4		●	●	▲		●															12.7	4.76	0.8	2.0			5.16
	NP-DNGA150408GA4		●	●	▲		●															12.7	4.76	1.2	1.9			5.16
	NP-DNGA150412GA4		●	●	▲		●															12.7	6.35	0.4	2.1			5.16
	NP-DNGA150604GA4		●	●			●															12.7	6.35	0.8	2.0			5.16
	NP-DNGA150608GA4		●	●			●															12.7	6.35	1.2	1.9			5.16
	NP-DNGA150612GA4		●	●			●															12.7	6.35	0.4	2.1			5.16
	NP-DNGA150404GH4	●	●	●																		12.7	4.76	0.8	2.0			5.16
	NP-DNGA150408GH4	●	●	●																		12.7	4.76	1.2	1.9			5.16
	NP-DNGA150412GH4	●	●	●																		12.7	6.35	0.4	2.1			5.16
	NP-DNGA150604GH4	●	●	●																		12.7	6.35	0.8	2.0			5.16
	NP-DNGA150608GH4	●	●	●																		12.7	6.35	1.2	1.9			5.16
	NP-DNGA150612GH4	●	●	●																		12.7	6.35	0.4	2.1			5.16
	NP-DNGA150404TS4	●																				12.7	4.76	0.8	2.0			5.16
	NP-DNGA150408TS4	●																				12.7	4.76	1.2	1.9			5.16
	NP-DNGA150412TS4	●																				12.7	6.35	0.4	2.1			5.16
	NP-DNGA150604TS4	●																				12.7	6.35	0.8	2.0			5.16
	NP-DNGA150608TS4	●																				12.7	6.35	1.2	1.9			5.16
	NP-DNGA150612TS4	●																				12.7	6.35	0.4	2.1			5.16
	NP-DNGA150404TA4		●	●	▲		●	●														12.7	4.76	0.8	2.0			5.16
	NP-DNGA150408TA4		●	●	▲		●	●														12.7	4.76	1.2	1.9			5.16
	NP-DNGA150412TA4		●	●	▲		●	●														12.7	6.35	0.4	2.1			5.16
	NP-DNGA150604TA4		●	●			●															12.7	6.35	0.8	2.0			5.16
	NP-DNGA150608TA4		●	●			●															12.7	6.35	1.2	1.9			5.16
	NP-DNGA150612TA4		●	●			●															12.7	6.35	0.4	2.1			5.16
	NP-DNGA150404TH4		●	●			●															12.7	4.76	0.8	2.0			5.16
	NP-DNGA150408TH4		●	●			●															12.7	4.76	1.2	1.9			5.16
	NP-DNGA150412TH4		●	●			●															12.7	6.35	0.4	2.1			5.16

● = NEW

● : Inventory maintained in Japan.
▲ : Inventory maintained in Japan. To be replaced by new products. However, the order for MB810, MB825, MB835 and MBC010 will be discontinued by the end of March 2020. The alternative grade for MB810, MB825 and MB835 is the MB8100 series, and the alternative grade for MBC010 is BC8105.
(1 insert in one case)

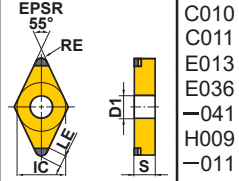
CBN TURNING INSERTS [NEGATIVE]

55° DN TYPE INSERTS WITH HOLE

CBN
B
CBN TURNING INSERTS

NEG
WITH HOLE
C
D
R
S
T
V
W

Work Material	H	Hardened Materials												Cutting Conditions (Guide) :					Dimensions (mm)	Geometry	Applicable Holder Page							
	K	Cast Iron												● : Stable Cutting ● : General Cutting ✖ : Unstable Cutting														
Shape	S	Heat-resistant Alloy, Titanium Alloy												Honing (Last letter of order number) : Refer to page B016.														
		Sintered Alloy																										
Order Number	Coated CBN		CBN											Solid CBN														
	EC8105	EC8110	EC8120	EC8130	MBC010	MBC020	MB8110	NEW MB8120	NEW MB8130	MB825	MB8810	MB825	MB835	NEW MB84120	MB84020	MB710	MB730	MB8140	IC	S	RE	LE	D1					
NEW PETIT CUT	NP-DNGA150404TS2	●												●	●				12.7	4.76	0.4	2.1	5.16					
	NP-DNGA150408TS2	●												●	●				12.7	4.76	0.8	2.0	5.16					
	NP-DNGA150412TS2	●												●	●				12.7	4.76	1.2	1.9	5.16					
	NP-DNGA150604TS2	●												●	●				12.7	6.35	0.4	2.1	5.16					
	NP-DNGA150608TS2	●												●	●				12.7	6.35	0.8	2.0	5.16					
	NP-DNGA150612TS2	●												●	●				12.7	6.35	1.2	1.9	5.16					
	NP-DNGA150404TA2	●	●	▲		●	●												12.7	4.76	0.4	2.1	5.16					
	NP-DNGA150408TA2	●	●	▲		●	●												12.7	4.76	0.8	2.0	5.16					
	NP-DNGA150412TA2	●	●	▲		●	●												12.7	4.76	1.2	1.9	5.16					
	NP-DNGA150604TA2	●	●	▲		●	●												12.7	6.35	0.4	2.1	5.16					
	NP-DNGA150608TA2	●	●	▲		●	●												12.7	6.35	0.8	2.0	5.16					
	NP-DNGA150612TA2	●	●	▲		●	●												12.7	6.35	1.2	1.9	5.16					
	NP-DNGA150404TH2	●	●			●													12.7	4.76	0.4	2.1	5.16					
	NP-DNGA150408TH2	●	●			●													12.7	4.76	0.8	2.0	5.16					
	NP-DNGA150412TH2	●	●			●													12.7	4.76	1.2	1.9	5.16					
	NP-DNGA150604TH2	●	●			●													12.7	6.35	0.4	2.1	5.16					
	NP-DNGA150608TH2	●	●			●													12.7	6.35	0.8	2.0	5.16					
	NP-DNGA150612TH2	●	●			●													12.7	6.35	1.2	1.9	5.16					
	NP-DNGA150404GN2			▲															12.7	4.76	0.4	2.1	5.16					
	NP-DNGA150408GN2			▲															12.7	4.76	0.8	2.0	5.16					
	NP-DNGA150412GN2			▲															12.7	4.76	1.2	1.9	5.16					
	NP-DNGA150404G2							▲											12.7	4.76	0.4	2.1	5.16					
	NP-DNGA150408G2							▲											12.7	4.76	0.8	2.0	5.16					
	NP-DNGA150412G2							▲											12.7	4.76	1.2	1.9	5.16					
	NP-DNGA150404T2							▲											12.7	4.76	0.4	2.1	5.16					
	NP-DNGA150408T2							▲											12.7	4.76	0.8	2.0	5.16					
	NP-DNGA150412T2							▲											12.7	4.76	1.2	1.9	5.16					
	NP-DNGA150404SF2													●	●				12.7	4.76	0.4	2.1	5.16					
	NP-DNGA150408SF2													●	●				12.7	4.76	0.8	2.0	5.16					
	NP-DNGA150412SF2													●	●				12.7	4.76	1.2	1.9	5.16					
	NEW NP-DNGA150604SF2													●	●				12.7	6.35	0.4	2.1	5.16					
	NEW NP-DNGA150608SF2													●	●				12.7	6.35	0.8	2.0	5.16					
	NEW NP-DNGA150612SF2													●	●				12.7	6.35	1.2	1.9	5.16					
	NP-DNGA150404SE2													●	●				12.7	4.76	0.4	2.1	5.16					
	NP-DNGA150408SE2													●	●				12.7	4.76	0.8	2.0	5.16					
	NP-DNGA150412SE2													●	●				12.7	4.76	1.2	1.9	5.16					
	NEW NP-DNGA150604SE2													●	●				12.7	6.35	0.4	2.1	5.16					
	NEW NP-DNGA150608SE2													●	●				12.7	6.35	0.8	2.0	5.16					
	NEW NP-DNGA150612SE2													●	●				12.7	6.35	1.2	1.9	5.16					



C010
C011
E013
E036
-041
H009
-011

● = NEW

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CBN TURNING INSERTS [NEGATIVE]

55° DN TYPE INSERTS WITH HOLE

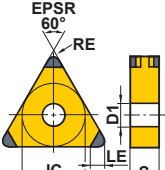
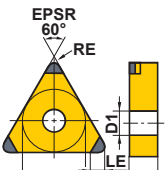
- CBN
- B
- CBN TURNING INSERTS
- NEG
- WITH HOLE
- C
- D
- R
- S
- T
- V
- W

Work Material	H	Hardened Materials													Cutting Conditions (Guide) :					Dimensions (mm)	Geometry	Applicable Holder Page							
	K	Cast Iron													● : Stable Cutting ● : General Cutting ✖ : Unstable Cutting														
Shape	S	Heat-resistant Alloy, Titanium Alloy	Coated CBN				CBN				Solid CBN																		
	S	Sintered Alloy	BC8105	BC8110	BC8120	BC8130	MBC010	MBC020	MB8110	NEW MB8120	MB8130	MB8025	MB810	MB825	MB835	NEW MB84120	MB4020	MB710	MB730			MBS140	IC	S	RE	LE	D1		C010 C011 E013 E036 -041 H009 -011
NEW PETIT CUT		NP-DNMA15040GS																			●	●							
		NP-DNMA150408GS																				●	●						
		NP-DNMA150404F										□																	
		NP-DNMA150404F										▲										●							
		NP-DNMA150408F										□																	
		NP-DNMA150408F										▲										●							
		NP-DNMA150412F										□																	
		NP-DNMA150404G										▲																	
		NP-DNMA150404G											▲																
		NP-DNMA150408G											▲																
		NP-DNMA150408G												▲															
		NP-DNMA150412G											▲																
		NP-DNMA150404T										□																	
		NP-DNMA150404T											▲▲									●							
		NP-DNMA150408T										□																	
		NP-DNMA150408T												▲▲								●							
	NP-DNMA150412T										□																		
		DNGA150404																			□	□							
		DNGA150408																				□	□						
		DNGA150412																				□	□						

● = NEW

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
 ▲ : Inventory maintained in Japan. To be replaced by new products. However, the order for MB810, MB825, MB835 and MBC010 will be discontinued by the end of March 2020. The alternative grade for MB810, MB825 and MB835 is the MB8100 series, and the alternative grade for MBC010 is BC8105.
 (1 insert in one case)

60° TN TYPE INSERTS WITH HOLE

Work Material	H	Hardened Materials															Cutting Conditions (Guide) :					Geometry	Applicable Holder Page	
	K	Cast Iron															●	●	✱	Honing (Last letter of order number) : Refer to page B016.				
Shape	Order Number	Coated CBN				CBN							Solid CBN	Dimensions (mm)					Geometry	Applicable Holder Page				
		EC8105	EC8110	EC8120	EC8130	MBC010	MBC020	NEW MB8110	NEW MB8120	NEW MB8130	MB8025	MB8810	MB8825	MB8835	NEW MB84120	NEW MB84020	MB710	MB730			MB8140	IC	S	RE
NEW PETIT CUT	NP-TNGA160404FS6	●●●																	9.525	4.76	0.4	1.6	3.81	 C016 C017 E014 E035 E040
	NP-TNGA160408FS6	●●●																	9.525	4.76	0.8	1.8	3.81	
	NP-TNGA160412FS6	●●●																	9.525	4.76	1.2	1.9	3.81	
	NP-TNGA160404GS6	●●●																	9.525	4.76	0.4	1.6	3.81	
	NP-TNGA160408GS6	●●●																	9.525	4.76	0.8	1.8	3.81	
	NP-TNGA160412GS6	●●●																	9.525	4.76	1.2	1.9	3.81	
	NP-TNGA160404GA6		●●	▲															9.525	4.76	0.4	1.6	3.81	
	NP-TNGA160408GA6		●●	▲															9.525	4.76	0.8	1.8	3.81	
	NP-TNGA160412GA6		●●	▲															9.525	4.76	1.2	1.9	3.81	
	NP-TNGA160404GH6		●●●																9.525	4.76	0.4	1.6	3.81	
	NP-TNGA160408GH6		●●●																9.525	4.76	0.8	1.8	3.81	
	NP-TNGA160412GH6		●●●																9.525	4.76	1.2	1.9	3.81	
	NP-TNGA160404TS6		●																9.525	4.76	0.4	1.6	3.81	
	NP-TNGA160408TS6		●																9.525	4.76	0.8	1.8	3.81	
	NP-TNGA160412TS6		●																9.525	4.76	1.2	1.9	3.81	
	NP-TNGA160404TA6		●●	▲			●●												9.525	4.76	0.4	1.6	3.81	
	NP-TNGA160408TA6		●●	▲			●●												9.525	4.76	0.8	1.8	3.81	
	NP-TNGA160412TA6		●●	▲			●●												9.525	4.76	1.2	1.9	3.81	
	NP-TNGA160404TH6		●●																9.525	4.76	0.4	1.6	3.81	
	NP-TNGA160408TH6		●●																9.525	4.76	0.8	1.8	3.81	
NP-TNGA160412TH6		●●																9.525	4.76	1.2	1.9	3.81		
NP-TNGA160404GN6			▲															9.525	4.76	0.4	1.6	3.81		
NP-TNGA160408GN6			▲															9.525	4.76	0.8	1.8	3.81		
NP-TNGA160412GN6			▲															9.525	4.76	1.2	1.9	3.81		
NEW PETIT CUT	NP-TNGA160402FS3		●																9.525	4.76	0.2	1.5	3.81	 C016 C017 E014 E035 E040
	NP-TNGA160404FS3	●●●																	9.525	4.76	0.4	1.6	3.81	
	NP-TNGA160408FS3	●●●																	9.525	4.76	0.8	1.8	3.81	
	NP-TNGA160412FS3	●●●																	9.525	4.76	1.2	1.9	3.81	
	NP-TNGA160402GS3		●																9.525	4.76	0.2	1.5	3.81	
	NP-TNGA160404GS3	●●●	▲																9.525	4.76	0.4	1.6	3.81	
	NP-TNGA160408GS3	●●●	▲																9.525	4.76	0.8	1.8	3.81	
	NP-TNGA160412GS3	●●●	▲																9.525	4.76	1.2	1.9	3.81	
	NP-TNGA160402GA3		●	▲															9.525	4.76	0.2	1.5	3.81	
	NP-TNGA160404GA3		●●	▲			●	▲											9.525	4.76	0.4	1.6	3.81	
	NP-TNGA160408GA3		●●	▲			●	▲											9.525	4.76	0.8	1.8	3.81	
	NP-TNGA160412GA3		●●	▲			●	▲											9.525	4.76	1.2	1.9	3.81	
	NP-TNGA160404GH3		●●●																9.525	4.76	0.4	1.6	3.81	
	NP-TNGA160408GH3		●●●																9.525	4.76	0.8	1.8	3.81	
	NP-TNGA160412GH3		●●●																9.525	4.76	1.2	1.9	3.81	
	NP-TNGA160404TS3		●																9.525	4.76	0.4	1.6	3.81	
	NP-TNGA160408TS3		●																9.525	4.76	0.8	1.8	3.81	
	NP-TNGA160412TS3		●																9.525	4.76	1.2	1.9	3.81	

● = NEW

CBN

B

CBN TURNING INSERTS

NEG

WITH HOLE

C

D

R

S

T

V

W

CBN TURNING INSERTS [NEGATIVE]



35° VN TYPE INSERTS WITH HOLE

CBN
B
CBN TURNING INSERTS

NEG
WITH HOLE
C
D
R
S
T
V
W

Work Material	H	Hardened Materials													Cutting Conditions (Guide) :					Dimensions (mm)	Geometry	Applicable Holder Page					
	K	Cast Iron													● : Stable Cutting ● : General Cutting ✖ : Unstable Cutting												
Shape	S	Heat-resistant Alloy, Titanium Alloy	Coated CBN				CBN						Solid CBN	IC	S	RE	LE	D1	Geometry	Applicable Holder Page							
	Sintered Alloy	BC8105	BC8110	BC8120	BC8130	MBC010	MBC020	MB8110	MB8120	MB8130	MB8025	MB810	MB825	MB835	MB8420	MB4020	MB710	MB730			MBS140						
NEW PETIT CUT	NP-VNGA160404FS4	● ● ●						●												9.525	4.76	0.4	2.5	3.81	 C018 -020 E015 E042		
	NP-VNGA160408FS4	● ● ●						●												9.525	4.76	0.8	2.0	3.81			
	NP-VNGA160412FS4	● ● ●																		9.525	4.76	1.2	1.6	3.81			
	NP-VNGA160404GS4	● ● ●																		9.525	4.76	0.4	2.5	3.81			
	NP-VNGA160408GS4	● ● ●																		9.525	4.76	0.8	2.0	3.81			
	NP-VNGA160412GS4	● ● ●																		9.525	4.76	1.2	1.6	3.81			
	NP-VNGA160404GA4	● ● ●	▲						●											9.525	4.76	0.4	2.5	3.81			
	NP-VNGA160408GA4	● ● ●	▲						●											9.525	4.76	0.8	2.0	3.81			
	NP-VNGA160412GA4	● ● ●							●											9.525	4.76	1.2	1.6	3.81			
	NP-VNGA160404GH4	● ● ●																		9.525	4.76	0.4	2.5	3.81			
	NP-VNGA160408GH4	● ● ●																		9.525	4.76	0.8	2.0	3.81			
	NP-VNGA160412GH4	● ● ●																		9.525	4.76	1.2	1.6	3.81			
	NP-VNGA160404TS4	● ● ●																		9.525	4.76	0.4	2.5	3.81			
	NP-VNGA160408TS4	● ● ●																		9.525	4.76	0.8	2.0	3.81			
	NP-VNGA160412TA4	● ● ●																		9.525	4.76	1.2	1.6	3.81			
	NP-VNGA160404TH4	● ● ●																		9.525	4.76	0.4	2.5	3.81			
	NP-VNGA160408TH4	● ● ●																		9.525	4.76	0.8	2.0	3.81			
	NP-VNGA160412TH4	● ● ●																		9.525	4.76	1.2	1.6	3.81			
	NEW PETIT CUT	NP-VNGA160402FS2	● ● ●						●												9.525	4.76	0.2	2.5		3.81	 C018 -020 E015 E042
		NP-VNGA160404FS2	● ● ●						●							● ●					9.525	4.76	0.4	2.5		3.81	
NP-VNGA160408FS2		● ● ●						●							● ●					9.525	4.76	0.8	2.0	3.81			
NP-VNGA160412FS2		● ● ●																		9.525	4.76	1.2	1.6	3.81			
NP-VNGA160402GS2		● ● ●																		9.525	4.76	0.2	2.5	3.81			
NP-VNGA160404GS2		● ● ●	▲												● ●					9.525	4.76	0.4	2.5	3.81			
NP-VNGA160408GS2		● ● ●	▲												● ●					9.525	4.76	0.8	2.0	3.81			
NP-VNGA160412GS2		● ● ●																		9.525	4.76	1.2	1.6	3.81			
NP-VNGA160402GA2		● ● ●	▲						●											9.525	4.76	0.2	2.5	3.81			
NP-VNGA160404GA2		● ● ●	▲						●		▲									9.525	4.76	0.4	2.5	3.81			
NP-VNGA160408GA2		● ● ●	▲						●		▲									9.525	4.76	0.8	2.0	3.81			
NP-VNGA160412GA2		● ● ●							●											9.525	4.76	1.2	1.6	3.81			
NP-VNGA160404GH2		● ● ●																		9.525	4.76	0.4	2.5	3.81			
NP-VNGA160408GH2		● ● ●																		9.525	4.76	0.8	2.0	3.81			
NP-VNGA160412GH2		● ● ●																		9.525	4.76	1.2	1.6	3.81			
NP-VNGA160404TS2		● ● ●														● ●				9.525	4.76	0.4	2.5	3.81			
NP-VNGA160408TS2		● ● ●													● ●					9.525	4.76	0.8	2.0	3.81			
NP-VNGA160404TA2		● ● ●																		9.525	4.76	0.4	2.5	3.81			
NP-VNGA160408TA2		● ● ●																		9.525	4.76	0.8	2.0	3.81			
NP-VNGA160412TA2		● ● ●																		9.525	4.76	1.2	1.6	3.81			

● = NEW

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products. However, the order for MB810, MB825, MB835 and MBC010 will be discontinued by the end of March 2020. The alternative grade for MB810, MB825 and MB835 is the MB8100 series, and the alternative grade for MBC010 is BC8105.

CBN TURNING INSERTS [POSITIVE]

80° CC TYPE INSERTS WITH HOLE

CBN

B

CBN TURNING INSERTS

POSITIVE
7°

WITH HOLE

C

D

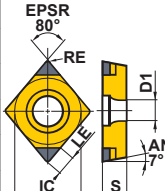
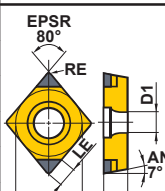
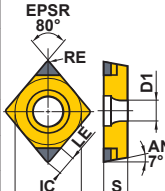
R

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V

W

Work Material	H	Hardened Materials											Cutting Conditions (Guide) :					Geometry	Applicable Holder Page							
	K	Cast Iron											● : Stable Cutting ● : General Cutting ✦ : Unstable Cutting													
Shape	S	Heat-resistant Alloy, Titanium Alloy	Coated CBN		CBN							Dimensions (mm)					Geometry	Applicable Holder Page								
		Sintered Alloy	BC8105	BC8110	BC8120	BC8130	MBC010	MBC020	NEW MB8110	NEW MB8120	NEW MB8130	MB8025	MB810	MB825	MB835	NEW MB84120			MB84020	MB710	MB730	IC	S	RE	LE	D1
NEW PETIT CUT																			●●	6.35	2.38	0.2	1.8	2.8	 <p>C022 D008 E006 E030 E034</p>	
	NP-CCGW060202FA2																		●●	6.35	2.38	0.4	1.9	2.8		
	NP-CCGW060204FA2																		●●	6.35	2.38	0.8	2.1	2.8		
	NP-CCGW09T304FA2																		●●	9.525	3.97	0.4	1.9	4.4		
	NP-CCGW09T308FA2																		●●	9.525	3.97	0.8	2.1	4.4		
	NP-CCGW09T302GN2						▲														9.525	3.97	0.2	1.8		4.4
	NP-CCGW09T304GN2						▲														9.525	3.97	0.4	1.9		4.4
	NP-CCGW09T308GN2						▲														9.525	3.97	0.8	2.1		4.4
	NP-CCGW09T304G2											▲									9.525	3.97	0.4	1.9		4.4
	NP-CCGW09T308G2											▲									9.525	3.97	0.8	2.1		4.4
	NP-CCGW060202SF2															●●				●●	6.35	2.38	0.2	1.8		2.8
	NP-CCGW060204SF2															●●				●●	6.35	2.38	0.4	1.9		2.8
	NP-CCGW060208SF2															●●				●●	6.35	2.38	0.8	2.1		2.8
	NP-CCGW09T302SF2															●●				●●	9.525	3.97	0.2	1.8		4.4
	NP-CCGW09T304SF2															●●				●●	9.525	3.97	0.4	1.9		4.4
	NP-CCGW09T308SF2															●●				●●	9.525	3.97	0.8	2.1		4.4
	NP-CCGW060202SE2															●●				●●	6.35	2.38	0.2	1.8		2.8
	NP-CCGW060204SE2															●●				●●	6.35	2.38	0.4	1.9		2.8
	NP-CCGW060208SE2															●●				●●	6.35	2.38	0.8	2.1		2.8
	NP-CCGW09T302SE2															●●				●●	9.525	3.97	0.2	1.8		4.4
NP-CCGW09T304SE2															●●				●●	9.525	3.97	0.4	1.9	4.4		
NP-CCGW09T308SE2															●●				●●	9.525	3.97	0.8	2.1	4.4		
NEW PETIT CUT *2	TNP-CCGW09T304G2										▲									9.525	3.97	0.4	1.9	4.4	 <p>C022 D008 E030 E034</p>	
	TNP-CCGW09T308G2										▲									9.525	3.97	0.8	2.1	4.4		
NEW PETIT CUT (With Wiper) *1	NP-CCGW09T304FSWS2	●●●						●												9.525	3.97	0.4	1.9	4.4	 <p>C022 D008 E030 E034</p>	
	NP-CCGW09T308FSWS2	●●●						●												9.525	3.97	0.8	2.1	4.4		
	NEW NP-CCGW09T304FBWL2	●●●						●												9.525	3.97	0.4	1.9	4.4		
	NEW NP-CCGW09T308FBWL2	●●●						●												9.525	3.97	0.8	2.1	4.4		
	NP-CCGW09T304GAWS2	●●						●												9.525	3.97	0.4	1.9	4.4		
	NP-CCGW09T308GAWS2	●●					▲		●		▲									9.525	3.97	0.8	2.1	4.4		
	NP-CCGW09T304GSWS2	●●							●											9.525	3.97	0.4	1.9	4.4		
	NP-CCGW09T308GSWS2	●●					▲		●											9.525	3.97	0.8	2.1	4.4		
NEW NP-CCGW09T304GBWL2	●●●							●											9.525	3.97	0.4	1.9	4.4			
NEW NP-CCGW09T308GBWL2	●●●							●											9.525	3.97	0.8	2.1	4.4			

*1 Please refer to B018 before using the wiper insert.

*2 The order number is for a 10-insert pack. Please specify order number, grade and quantity.

● = NEW


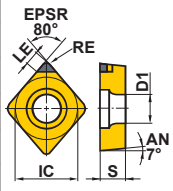

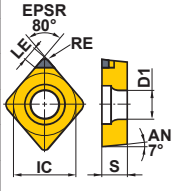

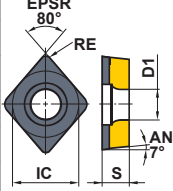

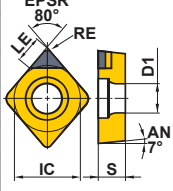
● : Inventory maintained in Japan. □ : Non stock, produced to order only.

▲ : Inventory maintained in Japan. To be replaced by new products. However, the order for MB810, MB825, MB835 and MBC010 will be discontinued by the end of March 2020. The alternative grade for MB810, MB825 and MB835 is the MB8100 series, and the alternative grade for MBC010 is BC8105.

(1 insert in one case)

CBN TURNING INSERTS [POSITIVE]

80° CC TYPE INSERTS WITH HOLE

Work Material	H	Hardened Materials	Cutting Conditions (Guide) :										Honing (Last letter of order number) : Refer to page B016.												
	K	Cast Iron	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							
Shape	Order Number	Coated CBN				CBN						Dimensions (mm)					Geometry	Applicable Holder Page							
		BC8105	BC8110	BC8120	BC8130	MBC010	MBC020	MB8110	MB8120	MB8130	MB8025	MB810	MB825	MB835	MB4120	MB4020			MB710	MB730	IC	S	RE	LE	D1
NEW PETIT CUT 	NP-CCGW09T302G																		9.525	3.97	0.2	1.8	4.4		C022 D008 E006 E030 E034
	NP-CCGW09T304G																		9.525	3.97	0.4	1.9	4.4		
	NP-CCGW09T308G																		9.525	3.97	0.8	2.1	4.4		
	NP-CCGW060202T																		6.35	2.38	0.2	1.8	2.8		
	NP-CCGW060204T																		6.35	2.38	0.4	1.9	2.8		
	NP-CCGW09T302T																		9.525	3.97	0.2	1.8	4.4		
	NP-CCGW09T304T																		9.525	3.97	0.4	1.9	4.4		
NP-CCGW09T308T																		9.525	3.97	0.8	2.1	4.4			
NEW PETIT CUT 	* NP-CCMW03S102F																		3.57	1.39	0.2	1.1	2.0		E016
	* NP-CCMW03S104F																		3.57	1.39	0.4	1.1	2.0		
	* NP-CCMW04T002F																		4.37	1.79	0.2	1.5	2.4		
	* NP-CCMW04T004F																		4.37	1.79	0.4	1.5	2.4		
	CCGW060202FS																		6.35	2.38	0.2	—	2.8		C022 D008 E006 E030 E034
	CCGW060204FS																		6.35	2.38	0.4	—	2.8		
	CCGW060208FS																		6.35	2.38	0.8	—	2.8		
	CCGW09T304FS																		9.525	3.97	0.4	—	4.4		
	CCGW09T308FS																		9.525	3.97	0.8	—	4.4		
	CCMW060202																		6.35	2.38	0.2	2.8	2.8		C022 D008 E006 E030 E034
	CCMW060204																		6.35	2.38	0.4	2.8	2.8		
	CCMW09T302																		9.525	3.97	0.2	3.7	4.4		
	CCMW09T304																		9.525	3.97	0.4	3.7	4.4		
	CCMW09T308																		9.525	3.97	0.8	3.6	4.4		
	CCMW120404																		12.7	4.76	0.4	3.7	5.5		
	CCMW120408																		12.7	4.76	0.8	3.6	5.5		
CCMW120412																		12.7	4.76	1.2	3.6	5.5			

* Diameter of inscribed circle is special. (For SCLC type)

● = NEW

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CBN TURNING INSERTS [POSITIVE]

55° DC TYPE INSERTS WITH HOLE

Work Material	H	Cutting Conditions (Guide) :														Honing (Last letter of order number) : Refer to page B016.									
	K	● : Stable Cutting ● : General Cutting ✦ : Unstable Cutting																							
Shape	Order Number	Coated CBN				CBN							Dimensions (mm)					Geometry	Applicable Holder Page						
		BC8105	BC8110	BC8120	BC8130	MBC010	MBC020	MB8110	MB8120	MB8130	MB8025	MB810	MB825	MB835	MB8420	MB4020	MB710			MB730	IC	S	RE	LE	D1
NEW PETIT CUT	NP-DCGW070202GA2	●		▲				●	▲									6.35	2.38	0.2	2.3	2.8			
	NP-DCGW070204GA2	●	●	▲				●	▲									6.35	2.38	0.4	2.1	2.8			
	NP-DCGW070208GA2		●	▲					▲									6.35	2.38	0.8	2.0	2.8			
	NP-DCGW11T302GA2	●		▲					●	▲									9.525	3.97	0.2	2.3			4.4
	NP-DCGW11T304GA2	●	●	▲					●	▲									9.525	3.97	0.4	2.1			4.4
	NP-DCGW11T308GA2	●	●	▲					●	▲									9.525	3.97	0.8	2.0			4.4
	NP-DCGW070202GS2	●	●																6.35	2.38	0.2	2.3			2.8
	NP-DCGW070204GS2	●	●	▲											●				6.35	2.38	0.4	2.1			2.8
	NP-DCGW070208GS2	●	●												●				6.35	2.38	0.8	2.0			2.8
	NP-DCGW11T302GS2	●	●	▲											●				9.525	3.97	0.2	2.3			4.4
	NP-DCGW11T304GS2	●	●	▲											●				9.525	3.97	0.4	2.1			4.4
	NP-DCGW11T304GS2															●	●		9.525	3.97	0.4	1.5			4.4
	NP-DCGW11T308GS2	●	●	▲											●				9.525	3.97	0.8	2.0			4.4
	NP-DCGW11T308GS2															●	●		9.525	3.97	0.8	1.7			4.4
	NP-DCGW070202GN2			▲															6.35	2.38	0.2	2.3			2.8
	NP-DCGW070204GN2			▲															6.35	2.38	0.4	2.1			2.8
	NP-DCGW070208GN2			▲															6.35	2.38	0.8	2.0			2.8
	NP-DCGW11T302GN2			▲															9.525	3.97	0.2	2.3			4.4
	NP-DCGW11T304GN2			▲															9.525	3.97	0.4	2.1			4.4
	NP-DCGW11T308GN2			▲															9.525	3.97	0.8	2.0			4.4
	NP-DCGW11T304GH2	●	●	●															9.525	3.97	0.4	2.1			4.4
	NP-DCGW11T308GH2	●	●	●															9.525	3.97	0.8	2.0			4.4
	NP-DCGW11T304G2																		9.525	3.97	0.4	2.1			4.4
	NP-DCGW11T308G2																		9.525	3.97	0.8	2.0			4.4
	NP-DCGW11T304FA2															●	●		9.525	3.97	0.4	1.5			4.4
	NP-DCGW11T308FA2															●	●		9.525	3.97	0.8	1.7			4.4
	NP-DCGW070202FS2	●							●										6.35	2.38	0.2	2.3			2.8
	NP-DCGW070204FS2	●	●						●						●	●			6.35	2.38	0.4	2.1			2.8
	NP-DCGW070208FS2	●							●						●	●			6.35	2.38	0.8	2.0			2.8
	NP-DCGW11T302FS2	●	●						●						●	●			9.525	3.97	0.2	2.3			4.4
	NP-DCGW11T304FS2	●	●	●					●						●	●			9.525	3.97	0.4	2.1			4.4
	NP-DCGW11T308FS2	●	●	●					●						●	●			9.525	3.97	0.8	2.0			4.4
	NP-DCGW070204TA2		●	●					●	●									6.35	2.38	0.4	2.1			2.8
	NP-DCGW070204TA2																▲		6.35	2.38	0.4	1.5			2.8
NP-DCGW070208TA2		●						●										6.35	2.38	0.8	2.0	2.8			
NP-DCGW11T302TA2																▲		9.525	3.97	0.2	2.3	4.4			
NP-DCGW11T304TA2		●	●					●	●									9.525	3.97	0.4	2.1	4.4			
NP-DCGW11T304TA2																▲		9.525	3.97	0.4	1.5	4.4			
NP-DCGW11T308TA2		●	●					●	●									9.525	3.97	0.8	2.0	4.4			
NP-DCGW11T308TA2																▲		9.525	3.97	0.8	1.7	4.4			

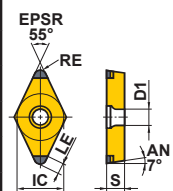
● = NEW

● : Inventory maintained in Japan.

▲ : Inventory maintained in Japan. To be replaced by new products. However, the order for MB810, MB825, MB835 and MBC010 will be discontinued by the end of March 2020. The alternative grade for MB810, MB825 and MB835 is the MB8100 series, and the alternative grade for MBC010 is BC8105.

CBN
B
CBN TURNING INSERTS

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CBN TURNING INSERTS [POSITIVE]

55° DC TYPE INSERTS WITH HOLE

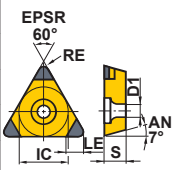
Work Material	H	Hardened Materials											Cutting Conditions (Guide) :												
	K	Cast Iron											● : Stable Cutting ● : General Cutting ✦ : Unstable Cutting												
Shape	S	Heat-resistant Alloy, Titanium Alloy											Honing (Last letter of order number) : Refer to page B016.												
		Sintered Alloy																							
Coated CBN	Order Number	CBN										Dimensions (mm)					Geometry	Applicable Holder Page							
		BC8105	BC8110	BC8120	BC8130	MBC010	MBC020	MB8110	MB8120	MB8130	MB8025	MB810	MB825	MB835	MB4120	MB4020			MB710	MB730	IC	S	RE	LE	D1
NEW PETIT CUT	NP-DCGW11T302GS																	●●	9.525	3.97	0.2	1.5	4.4		C023 D009 D026 E008 E009 E029 E031
	NP-DCGW11T304GS																	●●	9.525	3.97	0.4	1.5	4.4		
	NP-DCGW070202G										▲								6.35	2.38	0.2	2.3	2.8		
	NP-DCGW070204G										▲								6.35	2.38	0.4	2.1	2.8		
	NP-DCGW070208G										▲								6.35	2.38	0.8	2.0	2.8		
	NP-DCGW11T302G										▲								9.525	3.97	0.2	2.3	4.4		
	NP-DCGW11T302G										▲								9.525	3.97	0.2	1.5	4.4		
	NP-DCGW11T304G										▲								9.525	3.97	0.4	2.1	4.4		
	NP-DCGW11T304G										▲								9.525	3.97	0.4	1.5	4.4		
	NP-DCGW11T308G										▲								9.525	3.97	0.8	2.0	4.4		
	NP-DCGW070202F										▲								6.35	2.38	0.2	1.5	2.8		
	NP-DCGW070204F										▲								6.35	2.38	0.4	1.5	2.8		
	NP-DCGW11T302F										▲								9.525	3.97	0.2	1.5	4.4		
	NP-DCGW11T304F										□								9.525	3.97	0.4	2.1	4.4		
	NP-DCGW11T304F										▲								9.525	3.97	0.4	1.5	4.4		
NP-DCGW11T308F										□								9.525	3.97	0.8	2.0	4.4			
NEW PETIT CUT	NP-DCGW070202T																	▲	6.35	2.38	0.2	1.5	2.8		C023 D009 D026 E008 E009 E029 E031
	NP-DCGW070204T																	▲	6.35	2.38	0.4	1.5	2.8		
	NP-DCGW11T302T																	▲	9.525	3.97	0.2	1.5	4.4		
	NP-DCGW11T304T										□								9.525	3.97	0.4	2.1	4.4		
	NP-DCGW11T304T																	▲	9.525	3.97	0.4	1.5	4.4		
	NP-DCGW11T308T										□								9.525	3.97	0.8	2.0	4.4		
NP-DCGW11T308T																	▲	9.525	3.97	0.8	1.7	4.4			
NEW PETIT CUT	NP-DCMW070204G																	▲	6.35	2.38	0.4	1.5	2.8		C023 D009 D026 E008 E009 E029 E031
	NP-DCMW11T304G																	▲	9.525	3.97	0.4	1.5	4.4		
NEW PETIT CUT	DCGW070204FS																	●	6.35	2.38	0.4	—	2.8		C023 D009 D026 E008 E009 E029 E031
	DCGW070208FS																	●	6.35	2.38	0.8	—	2.8		
NEW PETIT CUT	DCMW070202																	□	6.35	2.38	0.2	3.7	2.8		C023 D009 D026 E008 E009 E029 E031
	DCMW070204																	□	6.35	2.38	0.4	3.5	2.8		
	DCMW11T302																	□	9.525	3.97	0.2	3.7	4.4		
	DCMW11T304																	□	9.525	3.97	0.4	3.5	4.4		

● = NEW

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60° TC TYPE INSERTS WITH HOLE

Work Material	H	Hardened Materials	Cutting Conditions (Guide) :												Cutting Conditions (Guide) :											
	K	Cast Iron	● : Stable Cutting ● : General Cutting ✖ : Unstable Cutting																							
Shape	S	Heat-resistant Alloy, Titanium Alloy	Honing (Last letter of order number) : Refer to page B016.												Honing (Last letter of order number) : Refer to page B016.											
	Sintered Alloy		Coated CBN		CBN					Dimensions (mm)						Geometry	Applicable Holder Page									
			BC8105	BC8110	BC8120	BC8130	MBC010	MBC020	MB8110	MB8120	MB8130	MB8025	MB810	MB825	MB835			MB4120	MB4020	MB710	MB730	IC	S	RE	LE	D1
NEW PETIT CUT	NP-TCGW090202GA3																			5.56	2.38	0.2	1.5	2.5	 C027 E028	
	NP-TCGW090204GA3																			5.56	2.38	0.4	1.6	2.5		
	NP-TCGW090208GA3																			5.56	2.38	0.8	1.8	2.5		
	NP-TCGW110202GA3																			6.35	2.38	0.2	1.5	2.8		
	NP-TCGW110204GA3																			6.35	2.38	0.4	1.6	2.8		
	NP-TCGW110208GA3																			6.35	2.38	0.8	1.8	2.8		
	NP-TCGW130304GA3																			7.94	3.18	0.4	1.6	3.4		
	NP-TCGW130308GA3																			7.94	3.18	0.8	1.8	3.4		
	NP-TCGW16T304GA3																			9.525	3.97	0.4	1.6	4.4		
	NP-TCGW16T308GA3																			9.525	3.97	0.8	1.8	4.4		
	NP-TCGW090204GS3			●																5.56	2.38	0.4	1.6	2.5		
	NP-TCGW090208GS3			●																5.56	2.38	0.8	1.8	2.5		
	NP-TCGW110202GS3			●																6.35	2.38	0.2	1.5	2.8		
	NP-TCGW110204GS3			●												●				6.35	2.38	0.4	1.6	2.8		
	NP-TCGW110208GS3			●												●				6.35	2.38	0.8	1.8	2.8		
	NP-TCGW130304GS3			●																7.94	3.18	0.4	1.6	3.4		
	NP-TCGW130308GS3			●																7.94	3.18	0.8	1.8	3.4		
	NP-TCGW16T304GS3			●																9.525	3.97	0.4	1.6	4.4		
	NP-TCGW16T308GS3			●																9.525	3.97	0.8	1.8	4.4		
	NP-TCGW110204FA3																	●●		6.35	2.38	0.4	1.6	2.8		
	NP-TCGW110208FA3																	●●		6.35	2.38	0.8	1.8	2.8		
	NP-TCGW110204FS3															●●				6.35	2.38	0.4	1.6	2.8		
	NP-TCGW110208FS3															●●				6.35	2.38	0.8	1.8	2.8		
	NP-TCGW110204TS3															●				6.35	2.38	0.4	1.6	2.8		
	NP-TCGW110208TS3															●				6.35	2.38	0.8	1.8	2.8		
	NP-TCGW110204SF3															●●				6.35	2.38	0.4	1.6	2.8		
	NP-TCGW110208SF3															●●				6.35	2.38	0.8	1.8	2.8		
	NP-TCGW110204SE3															●●				6.35	2.38	0.4	1.6	2.8		
	NP-TCGW110208SE3															●●				6.35	2.38	0.8	1.8	2.8		
	C027 E028	TCGW090204FS																●		5.56	2.38	0.4	—	2.5		
TCGW090208FS																	●		5.56	2.38	0.8	—	2.5			
TCGW110204FS																	●		6.35	2.38	0.4	—	2.8			
TCGW110208FS																	●		6.35	2.38	0.8	—	2.8			
C027 E028	TCMW110202																□□		6.35	2.38	0.2	2.8	2.8			
	TCMW110204																□□		6.35	2.38	0.4	2.6	2.8			

● = NEW

CBN

B

CBN TURNING INSERTS

POSI 7°

WITH HOLE

C

D

R

S

T

V

W

CBN TURNING INSERTS [POSITIVE]

60° TP TYPE INSERTS WITH HOLE

Work Material	H	Hardened Materials	Cutting Conditions (Guide) :											Honing (Last letter of order number) : Refer to page B016.												
	K	Cast Iron	● : Stable Cutting ● : General Cutting ✖ : Unstable Cutting																							
Shape	S	Heat-resistant Alloy, Titanium Alloy	Coated CBN		CBN							Dimensions (mm)					Geometry	Applicable Holder Page								
		Sintered Alloy	BC8105	BC8110	BC8120	BC8130	MBC010	MBC020	NEW MB8110	NEW MB8120	NEW MB8130	MB8025	MB810	MB825	MB835	NEW MB4120			NEW MB4020	MB710	MB730	IC	S	RE	LE	D1
NEW PETIT CUT																				4.76	2.38	0.4	1.6	2.4		
	NP-TPGB080204GA3		●	▲																4.76	2.38	0.8	1.8	2.4		
	NP-TPGB090204GA3		●	▲																5.56	2.38	0.4	1.6	2.9		
	NP-TPGB090208GA3		●	▲																5.56	2.38	0.8	1.8	2.9		
	NP-TPGB110302GA3		●																	6.35	3.18	0.2	1.5	3.4		
	NP-TPGB110304GA3		●	▲																6.35	3.18	0.4	1.6	3.4		
	NP-TPGB110308GA3		●	▲																6.35	3.18	0.8	1.8	3.4		
	NP-TPGB160304GA3		●	▲																9.525	3.18	0.4	1.6	4.4		
	NP-TPGB160308GA3		●	▲																9.525	3.18	0.8	1.8	4.4		
	NP-TPGB080204GS3	●	●																	4.76	2.38	0.4	1.6	2.4		
	NP-TPGB080208GS3	●	●																	4.76	2.38	0.8	1.8	2.4		
	NEW NP-TPGB090202GS3															●				5.56	2.38	0.2	1.5	2.9		
	NP-TPGB090204GS3	●	●													●				5.56	2.38	0.4	1.6	2.9		
	NP-TPGB090208GS3	●	●																	5.56	2.38	0.8	1.8	2.9		
	NP-TPGB110302GS3	●	●													●				6.35	3.18	0.2	1.5	3.4		
	NP-TPGB110304GS3	●	●													●				6.35	3.18	0.4	1.6	3.4		
	NP-TPGB110308GS3	●	●													●				6.35	3.18	0.8	1.8	3.4		
	NP-TPGB160304GS3	●	●																	9.525	3.18	0.4	1.6	4.4		
	NP-TPGB160308GS3	●	●																	9.525	3.18	0.8	1.8	4.4		
	NP-TPGB160304GH3	●	●	●																9.525	3.18	0.4	1.6	4.4		
	NP-TPGB160308GH3	●	●	●																9.525	3.18	0.8	1.8	4.4		
	NP-TPGB090202FS3															●	●			5.56	2.38	0.2	1.5	2.9		
	NP-TPGB090204FS3															●	●			5.56	2.38	0.4	1.6	2.9		
	NP-TPGB110302FS3	●	●													●	●			6.35	3.18	0.2	1.5	3.4		
	NP-TPGB110304FS3	●	●	●												●	●			6.35	3.18	0.4	1.6	3.4		
	NP-TPGB110308FS3	●	●	●												●	●			6.35	3.18	0.8	1.8	3.4		
	NP-TPGB160304FS3		●																	9.525	3.18	0.4	1.6	4.4		
	NP-TPGB160308FS3		●																	9.525	3.18	0.8	1.8	4.4		
	NP-TPGB080204TA3		●																	4.76	2.38	0.4	1.6	2.4		
	NP-TPGB080208TA3		●																	4.76	2.38	0.8	1.8	2.4		
	NP-TPGB090204TA3		●																	5.56	2.38	0.4	1.6	2.9		
	NP-TPGB090208TA3		●																	5.56	2.38	0.8	1.8	2.9		
	NP-TPGB110304TA3		●	●																6.35	3.18	0.4	1.6	3.4		
	NP-TPGB110308TA3		●	●																6.35	3.18	0.8	1.8	3.4		
	NP-TPGB160304TA3		●	●																9.525	3.18	0.4	1.6	4.4		
	NP-TPGB160308TA3		●	●																9.525	3.18	0.8	1.8	4.4		
	NP-TPGB160304TH3		●	●																9.525	3.18	0.4	1.6	4.4		
	NP-TPGB160308TH3		●	●																9.525	3.18	0.8	1.8	4.4		
	NP-TPGB090202SF3															●	●			5.56	2.38	0.2	1.5	2.9		
	NP-TPGB090204SF3															●	●			5.56	2.38	0.4	1.6	2.9		
NP-TPGB110302SF3															●	●			6.35	3.18	0.2	1.5	3.4			
NP-TPGB110304SF3															●	●			6.35	3.18	0.4	1.6	3.4			
NP-TPGB110308SF3															●	●			6.35	3.18	0.8	1.8	3.4			

● : Inventory maintained in Japan. □ : Non stock, produced to order only.

● = NEW

▲ : Inventory maintained in Japan. To be replaced by new products. However, the order for MB810, MB825, MB835 and MBC010 will be discontinued by the end of March 2020. The alternative grade for MB810, MB825 and MB835 is the MB8100 series, and the alternative grade for MBC010 is BC8105. (1 insert in one case)

CBN

B

CBN TURNING INSERTS

POSITIVE

WITH HOLE

C

D

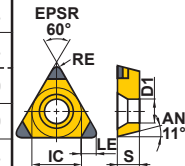
R

S

T

V

W



E007

PCD TURNING INSERTS [NEGATIVE]

80° CN TYPE INSERTS WITH HOLE

PCD
B
PCD TURNING INSERTS

NEG
WITH HOLE
C

D


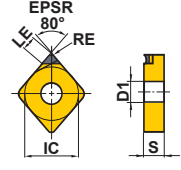

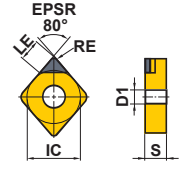
R

S


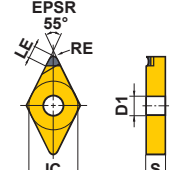

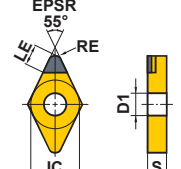
T

V

W

Work Material	N	Non-ferrous Metal	PCD	Cutting Conditions (Guide) :					Geometry	Applicable Holder Page
				●	●	●	●	✦		
Shape	Order Number	MD220	Dimensions (mm)					Geometry	Applicable Holder Page	
			IC	S	RE	LE	D1			
 NEW PETIT CUT (With Breaker)	NP-CNMM120402R-F	●	12.7	4.76	0.2	1.8	5.16	 Right hand insert shown.	C008 C009 E013 E036 E041 H006 -008	
	NP-CNMM120402L-F	□	12.7	4.76	0.2	1.8	5.16			
	NP-CNMM120404R-F	●	12.7	4.76	0.4	1.9	5.16			
	NP-CNMM120404L-F	□	12.7	4.76	0.4	1.9	5.16			
	NP-CNMM120408R-F	●	12.7	4.76	0.8	2.1	5.16			
	NP-CNMM120408L-F	□	12.7	4.76	0.8	2.1	5.16			
 CNMA120404 CNMA120408	CNMA120404	●	12.7	4.76	0.4	3.7	5.16	 Right hand insert shown.	C008 C009 E013 E036 E041 H006 -008	
	CNMA120408	●	12.7	4.76	0.8	3.6	5.16			

55° DN TYPE INSERTS WITH HOLE

Work Material	N	Non-ferrous Metal	PCD	Cutting Conditions (Guide) :					Geometry	Applicable Holder Page
				●	●	●	●	✦		
Shape	Order Number	MD220	Dimensions (mm)					Geometry	Applicable Holder Page	
			IC	S	RE	LE	D1			
 NEW PETIT CUT (With Breaker)	NP-DNMM150402R-F	●	12.7	4.76	0.2	1.5	5.16	 Right hand insert shown.	C010 C011 E013 E036 -041 H009 -011	
	NP-DNMM150402L-F	□	12.7	4.76	0.2	1.5	5.16			
	NP-DNMM150404R-F	●	12.7	4.76	0.4	1.5	5.16			
	NP-DNMM150404L-F	□	12.7	4.76	0.4	1.5	5.16			
	NP-DNMM150408R-F	●	12.7	4.76	0.8	1.7	5.16			
	NP-DNMM150408L-F	□	12.7	4.76	0.8	1.7	5.16			
 DNMA150404 DNMA150408	DNMA150404	●	12.7	4.76	0.4	2.9	5.16	 Right hand insert shown.	C010 C011 E013 E036 -041 H009 -011	
	DNMA150408	●	12.7	4.76	0.8	2.5	5.16			

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
 (1 insert in one case)

90° SN TYPE INSERTS WITH HOLE

Work Material	N	Non-ferrous Metal	●	Cutting Conditions (Guide) :					PCD	Dimensions (mm)	Geometry	Applicable Holder Page
				● : Stable Cutting	● : General Cutting	✦ : Unstable Cutting						
Shape	Order Number	MD220	PCD	IC	S	RE	LE	D1				
												NEW PETIT CUT
	NP-SNMM120404L-F	□	12.7	4.76	0.4	2.1	5.16					
	NP-SNMM120408R-F	●	12.7	4.76	0.8	2.3	5.16					
	NP-SNMM120408L-F	□	12.7	4.76	0.8	2.3	5.16					
(With Breaker)												
	SNGA120404	□	12.7	4.76	0.4	3.8	5.16		C012 -015 E014 E035			
	SNGA120408	●	12.7	4.76	0.8	3.8	5.16					

PCD
B
PCD TURNING INSERTS

NEG
WITH HOLE

- C
- D
- R
- S
- T
- V
- W


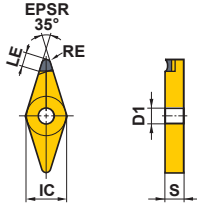

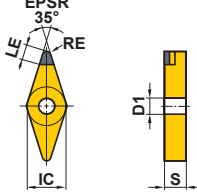
60° TN TYPE INSERTS WITH HOLE

Work Material	N	Non-ferrous Metal	●	Cutting Conditions (Guide) :					PCD	Dimensions (mm)	Geometry	Applicable Holder Page
				● : Stable Cutting	● : General Cutting	✦ : Unstable Cutting						
Shape	Order Number	MD220	PCD	IC	S	RE	LE	D1				
												NEW PETIT CUT
	NP-TNMM160402L-F	□	9.525	4.76	0.2	1.5	3.81					
	NP-TNMM160404R-F	●	9.525	4.76	0.4	1.6	3.81					
	NP-TNMM160404L-F	□	9.525	4.76	0.4	1.6	3.81					
	NP-TNMM160408R-F	●	9.525	4.76	0.8	1.8	3.81					
	NP-TNMM160408L-F	□	9.525	4.76	0.8	1.8	3.81					
(With Breaker)												
	TNGA160402	●	9.525	4.76	0.2	3.1	3.81		C016 C017 E014 E035 E040			
	TNGA160404	●	9.525	4.76	0.4	3.0	3.81					
	TNGA160408	●	9.525	4.76	0.8	2.8	3.81					

PCD TURNING INSERTS [NEGATIVE]



35° VN TYPE INSERTS WITH HOLE

Work Material	N	Non-ferrous Metal	●	Cutting Conditions (Guide) :					PCD	Dimensions (mm)					Geometry	Applicable Holder Page
				● : Stable Cutting	● : General Cutting	✦ : Unstable Cutting										
Shape	Order Number		MD220	IC	S	RE	LE	D1								
 NEW PETIT CUT	NP-VNMM160402R-F		●	9.525	4.76	0.2	1.3	3.81	 EPSR 35° LE RE IC D1 S Right hand insert shown.					C018 -020 E015 E042		
	NP-VNMM160402L-F		□	9.525	4.76	0.2	1.3	3.81								
	NP-VNMM160404R-F		●	9.525	4.76	0.4	1.4	3.81								
	NP-VNMM160404L-F		□	9.525	4.76	0.4	1.4	3.81								
	NP-VNMM160408R-F		●	9.525	4.76	0.8	1.5	3.81								
	NP-VNMM160408L-F		□	9.525	4.76	0.8	1.5	3.81								
(With Breaker)																
 VNGA160404 VNGA160408	VNGA160404		●	9.525	4.76	0.4	2.6	3.81	 EPSR 35° LE RE IC D1 S					C018 -020 E015 E042		
	VNGA160408		●	9.525	4.76	0.8	1.8	3.81								

PCD
B


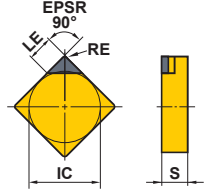
PCD TURNING INSERTS

NEG
WITHOUT HOLE

- C
- D
- R
- S
- T
- V
- W

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(1 insert in one case)

90° SN TYPE INSERTS WITHOUT HOLE

Work Material	N	Non-ferrous Metal	●	Cutting Conditions (Guide) :				Geometry	Applicable Holder Page
				● : Stable Cutting	● : General Cutting	✦ : Unstable Cutting			
Shape	Order Number	PCD	Dimensions (mm)				I		
		MD220	IC	S	RE	LE			
	SNGN120404	□	12.7	4.76	0.4	3.8		I	
	SNGN120408	●	12.7	4.76	0.8	3.8			

PCD
B
PCD TURNING INSERTS

NEG
WITH HOLE
C
D
R
S
T
V
W

PCD TURNING INSERTS [POSITIVE]

80° CC TYPE INSERTS WITH HOLE

PCD
B
PCD TURNING INSERTS

POSI
7°
11°
WITH HOLE

C

D


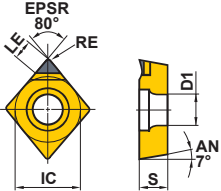

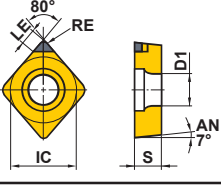

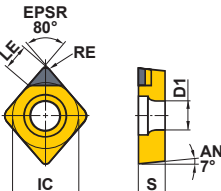
R

S

T


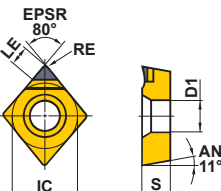

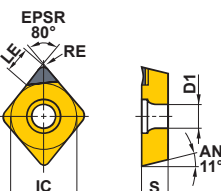
V

W

Work Material	N	Non-ferrous Metal	PCD	Cutting Conditions (Guide) :					Geometry	Applicable Holder Page		
				●	●	●	✦	✦				
Shape	Order Number	MD220	Dimensions (mm)					IC	S	RE	LE	D1
			IC	S	RE	LE	D1					
NEW PETIT CUT  (With Breaker)	NP-CCMH060202	●	6.35	2.38	0.2	1.8	2.8		E006	E030	E034	
	NP-CCMH060204	●	6.35	2.38	0.4	1.9	2.8					
NEW PETIT CUT 	* NP-CCMW03S102	●	3.57	1.39	0.2	1.8	2.0		E016			
	* NP-CCMW03S104	●	3.57	1.39	0.4	1.9	2.0					
	* NP-CCMW04T002	●	4.37	1.79	0.2	1.8	2.4					
	* NP-CCMW04T004	●	4.37	1.79	0.4	1.9	2.4					
	CCMW060202	●	6.35	2.38	0.2	2.9	2.8		C022	D008	E006	
	CCMW060204	●	6.35	2.38	0.4	2.9	2.8					
	CCMW09T302	●	9.525	3.97	0.2	3.3	4.4					
	CCMW09T304	●	9.525	3.97	0.4	3.3	4.4					


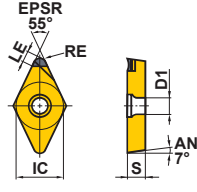

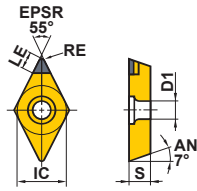
* Diameter of inscribed circle is special. (For SCLC type)

80° CP TYPE INSERTS WITH HOLE

Work Material	N	Non-ferrous Metal	PCD	Cutting Conditions (Guide) :					Geometry	Applicable Holder Page		
				●	●	●	✦	✦				
Shape	Order Number	MD220	Dimensions (mm)					IC	S	RE	LE	D1
			IC	S	RE	LE	D1					
NEW PETIT CUT  (With Breaker)	NP-CPMH080202	●	7.94	2.38	0.2	1.8	3.5		E006			
	NP-CPMH080204	●	7.94	2.38	0.4	1.9	3.5					
	NP-CPMH090302	●	9.525	3.18	0.2	1.8	4.5					
	NP-CPMH090304	●	9.525	3.18	0.4	1.9	4.5					
 (With Breaker)	CPGT080202	●	7.94	2.38	0.2	3.7	3.4		-			
	CPGT080204	●	7.94	2.38	0.4	3.7	3.4					
	CPGT090302	●	9.525	3.18	0.2	3.3	4.4					
	CPGT090304	●	9.525	3.18	0.4	3.3	4.4					

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

55° DC TYPE INSERTS WITH HOLE


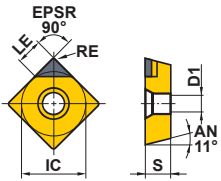
Work Material	N	Non-ferrous Metal	●	Cutting Conditions (Guide) :					
				● : Stable Cutting ● : General Cutting ✦ : Unstable Cutting					
Shape	Order Number	PCD	Dimensions (mm)					Geometry	Applicable Holder Page
		MD220	IC	S	RE	LE	D1		
 NEW PETIT CUT (With Breaker)	NP-DCMT070202R-F	●	6.35	2.38	0.2	1.5	2.8	 Left hand insert shown.	C023 D009 D026 E008 E009 E029 E031
	NP-DCMT070202L-F	●	6.35	2.38	0.2	1.5	2.8		
	NP-DCMT070204R-F	●	6.35	2.38	0.4	1.5	2.8		
	NP-DCMT070204L-F	●	6.35	2.38	0.4	1.5	2.8		
	NP-DCMT11T302R-F	●	9.525	3.97	0.2	1.5	4.4		
	NP-DCMT11T302L-F	●	9.525	3.97	0.2	1.5	4.4		
	NP-DCMT11T304R-F	●	9.525	3.97	0.4	1.5	4.4		
	NP-DCMT11T304L-F	●	9.525	3.97	0.4	1.5	4.4		
 DCMW070202 DCMW070204 DCMW11T302 DCMW11T304	DCMW070202	●	6.35	2.38	0.2	2.7	2.8		C023 D009 D026 E008 E009 E029 E031
	DCMW070204	●	6.35	2.38	0.4	2.6	2.8		
	DCMW11T302	●	9.525	3.97	0.2	3.0	4.4		
	DCMW11T304	●	9.525	3.97	0.4	2.9	4.4		

PCD
B
PCD TURNING INSERTS

POSI
7°
11°
WITH HOLE


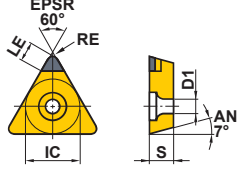

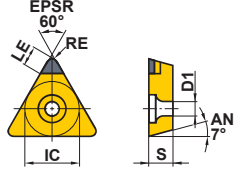
- C**
- D**
- R**
- S**
- T**
- V**
- W**

90° SP TYPE INSERTS WITH HOLE

Work Material	N	Non-ferrous Metal	●	Cutting Conditions (Guide) :					
				● : Stable Cutting ● : General Cutting ✦ : Unstable Cutting					
Shape	Order Number	PCD	Dimensions (mm)					Geometry	Applicable Holder Page
		MD220	IC	S	RE	LE	D1		
 SPGX090304 SPGX090308	SPGX090304	●	9.525	3.18	0.4	3.8	4.8		I
	SPGX090308	●	9.525	3.18	0.8	3.8	4.8		

PCD TURNING INSERTS [POSITIVE]

60° TC TYPE INSERTS WITH HOLE

Work Material	N	Non-ferrous Metal	●	Cutting Conditions (Guide) :					Geometry	Applicable Holder Page
				● : Stable Cutting	● : General Cutting	✦ : Unstable Cutting				
Shape	Order Number	PCD	Dimensions (mm)					Geometry	Applicable Holder Page	
		MD220	IC	S	RE	LE	D1			
	TCMW110202	●	6.35	2.38	0.2	2.8	2.8		C027 E028	
	TCMW110204	●	6.35	2.38	0.4	2.6	2.8			
	TCGW060102	●	3.97	1.59	0.2	1.5	2.3		-	
	TCGW060104	●	3.97	1.59	0.4	1.6	2.3			
	TCGW060108	●	3.97	1.59	0.8	1.4	2.3			

PCD
B

PCD TURNING INSERTS

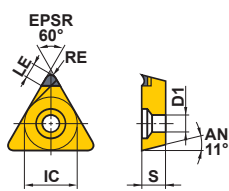
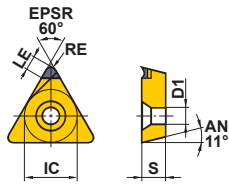
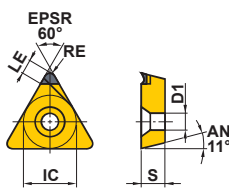
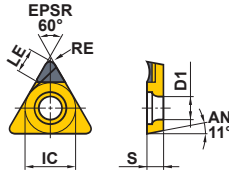
POSI
7°

WITH HOLE

- C
- D
- R
- S
- T**
- V
- W

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(1 insert in one case)

60° TP TYPE INSERTS WITH HOLE

Work Material	N	Non-ferrous Metal	PCD	Cutting Conditions (Guide) :					Geometry	Applicable Holder Page		
				●	●	✦	●	●			●	
Shape	Order Number	MD220	Dimensions (mm)					PCD	Geometry			
			IC	S	RE	LE	D1					
NEW PETIT CUT	NP-TPMX090202R-F	●	5.56	2.38	0.2	1.5	3.0	 NP-TPMX160000R/L-F  Right hand insert shown.	E025			
	NP-TPMX090202L-F	●	5.56	2.38	0.2	1.5	3.0					
	NP-TPMX090204R-F	□	5.56	2.38	0.4	1.6	3.0					
	NP-TPMX090204L-F	●	5.56	2.38	0.4	1.6	3.0					
	NP-TPMX090208R-F	□	5.56	2.38	0.8	1.8	3.0					
	NP-TPMX090208L-F	●	5.56	2.38	0.8	1.8	3.0					
	NP-TPMX110302R-F	□	6.35	3.18	0.2	1.5	3.5					
	NP-TPMX110302L-F	●	6.35	3.18	0.2	1.5	3.5					
	NP-TPMX110304R-F	□	6.35	3.18	0.4	1.6	3.5					
	NP-TPMX110304L-F	●	6.35	3.18	0.4	1.6	3.5					
	NP-TPMX110308R-F	□	6.35	3.18	0.8	1.8	3.5					
	NP-TPMX110308L-F	●	6.35	3.18	0.8	1.8	3.5					
	NP-TPMX160302R-F	□	9.525	3.18	0.2	1.5	4.8					
	NP-TPMX160302L-F	●	9.525	3.18	0.2	1.5	4.8					
	NP-TPMX160304R-F	□	9.525	3.18	0.4	1.6	4.8					
	NP-TPMX160304L-F	●	9.525	3.18	0.4	1.6	4.8					
	NP-TPMX160308R-F	□	9.525	3.18	0.8	1.8	4.8					
	(With Breaker) NP-TPMX160308L-F	●	9.525	3.18	0.8	1.8	4.8					
NEW PETIT CUT	NP-TPMH080202R-F	●	4.76	2.38	0.2	1.5	2.4	 Left hand insert shown.	E007			
	NP-TPMH080202L-F	●	4.76	2.38	0.2	1.5	2.4					
	NP-TPMH080204R-F	●	4.76	2.38	0.4	1.6	2.4					
	NP-TPMH080204L-F	●	4.76	2.38	0.4	1.6	2.4					
	NP-TPMH090202R-F	●	5.56	2.38	0.2	1.5	2.9					
	NP-TPMH090202L-F	●	5.56	2.38	0.2	1.5	2.9					
	NP-TPMH090204R-F	●	5.56	2.38	0.4	1.6	2.9					
	NP-TPMH090204L-F	●	5.56	2.38	0.4	1.6	2.9					
	NP-TPMH110302R-F	●	6.35	3.18	0.2	1.5	3.4					
	NP-TPMH110302L-F	●	6.35	3.18	0.2	1.5	3.4					
	NP-TPMH110304R-F	●	6.35	3.18	0.4	1.6	3.4					
	NP-TPMH110304L-F	●	6.35	3.18	0.4	1.6	3.4					
	NP-TPMH160302R-F	●	9.525	3.18	0.2	1.5	4.4					
	NP-TPMH160302L-F	●	9.525	3.18	0.2	1.5	4.4					
	NP-TPMH160304R-F	●	9.525	3.18	0.4	1.6	4.4					
	(With Breaker) NP-TPMH160304L-F	●	9.525	3.18	0.4	1.6	4.4					
	(With Breaker)	TPGT160302R-F	●	9.525	3.18	0.2	3.1			4.4	 Right hand insert shown.	-
		TPGT160302L-F	●	9.525	3.18	0.2	3.1			4.4		
TPGT160304R-F		●	9.525	3.18	0.4	3.0	4.4					
TPGT160304L-F		●	9.525	3.18	0.4	3.0	4.4					

PCD

B

PCD TURNING INSERTS

POSI 11°

WITH HOLE

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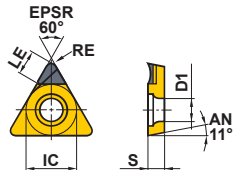

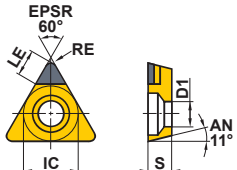
T

V

W

PCD TURNING INSERTS [POSITIVE]

60° TP TYPE INSERTS WITH HOLE

Work Material	N	Non-ferrous Metal	PCD	Cutting Conditions (Guide) :					Geometry	Applicable Holder Page
				●	●	●	●	●		
Shape	Order Number	MD220	Dimensions (mm)					Geometry	Applicable Holder Page	
			IC	S	RE	LE	D1			
 (With Breaker)	TPGV090202R-F	●	5.56	2.38	0.2	2.8	2.8	 Right hand insert shown.	I	
	TPGV090202L-F	●	5.56	2.38	0.2	2.8	2.8			
	TPGV090204R-F	●	5.56	2.38	0.4	2.6	2.8			
	TPGV090204L-F	●	5.56	2.38	0.4	2.6	2.8			
	TPGV110302R-F	●	6.35	3.18	0.2	2.8	3.4			
	TPGV110302L-F	●	6.35	3.18	0.2	2.8	3.4			
	TPGV110304R-F	●	6.35	3.18	0.4	2.6	3.4			
	TPGV110304L-F	●	6.35	3.18	0.4	2.6	3.4			
	TPGX080202	●	4.76	2.38	0.2	1.9	2.5	 TPGX16○○○○○	E025	
	TPGX080204	●	4.76	2.38	0.4	1.7	2.5			
	TPGX080208	●	4.76	2.38	0.8	1.4	2.5			
	TPGX090202	●	5.56	2.38	0.2	2.8	3.0			
	TPGX090204	●	5.56	2.38	0.4	2.6	3.0			
	TPGX090208	●	5.56	2.38	0.8	2.3	3.0			
	TPGX110302	●	6.35	3.18	0.2	2.8	3.5			
	TPGX110304	●	6.35	3.18	0.4	2.6	3.5			
	TPGX110308	●	6.35	3.18	0.8	2.3	3.5			
	TPGX160304	●	9.525	3.18	0.4	3	4.8			
TPGX160308	●	9.525	3.18	0.8	2.7	4.8				

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

PCD TURNING INSERTS

PCD

B

POS11°

WITH HOLE

C

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W



35° VB TYPE INSERTS WITH HOLE


Work Material	N	Non-ferrous Metal	●	Cutting Conditions (Guide) :				PCD	Dimensions (mm)	Geometry	Applicable Holder Page
				● : Stable Cutting ● : General Cutting ✦ : Unstable Cutting							
Shape	Order Number	MD220	IC	S	RE	LE	D1	Geometry	Applicable Holder Page		
										 (With Breaker)	NP-VBGT110301R-F
NP-VBGT110302R-F	●	6.35	3.18	0.2	2.6	2.85					
NP-VBGT110304R-F	●	6.35	3.18	0.4	2.5	2.85					
NP-VBGT1103V5R-F	●	6.35	3.18	0.05	2.5	2.85					

PCD
B
PCD TURNING INSERTS

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7°
WITH HOLE
C
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S
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V
W



35° VC TYPE INSERTS WITH HOLE


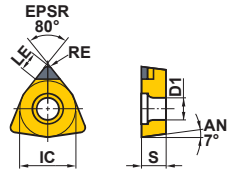
Work Material	N	Non-ferrous Metal	●	Cutting Conditions (Guide) :				PCD	Dimensions (mm)	Geometry	Applicable Holder Page
				● : Stable Cutting ● : General Cutting ✦ : Unstable Cutting							
Shape	Order Number	MD220	IC	S	RE	LE	D1	Geometry	Applicable Holder Page		
										 (With Breaker)	NP-VCGT080201R-F
NP-VCGT080202R-F	●	4.76	2.38	0.2	2.6	2.4					
NP-VCGT080204R-F	●	4.76	2.38	0.4	2.5	2.4					
NP-VCGT0802V5R-F	●	4.76	2.38	0.05	2.5	2.4					
NP-VCGT110301R-F	●	6.35	3.18	0.1	2.6	2.8					
NP-VCGT110302R-F	●	6.35	3.18	0.2	2.6	2.8					
NP-VCGT110304R-F	●	6.35	3.18	0.4	2.5	2.8					
NP-VCGT1103V5R-F	●	6.35	3.18	0.05	2.5	2.8					

PCD TURNING INSERTS [POSITIVE]


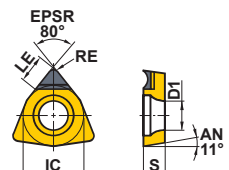
80° WC TYPE INSERTS WITH HOLE

PCD TURNING INSERTS

POSI
 7°
 11°
 WITH
 HOLE
 C
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
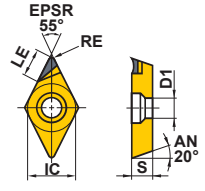
Work Material	N	Non-ferrous Metal	PCD	Cutting Conditions (Guide) :					Geometry	Applicable Holder Page
				● : Stable Cutting ● : General Cutting ✦ : Unstable Cutting						
Shape	Order Number	MD220	Dimensions (mm)					Geometry	Applicable Holder Page	
			IC	S	RE	LE	D1			
	WCMWL30202	●	4.76	2.38	0.2	1.6	2.3		E027	
	WCMWL30204	□	4.76	2.38	0.4	1.7	2.3			
	WCMW040202	●	6.35	2.38	0.2	2.9	2.8			
	WCMW040204	□	6.35	2.38	0.4	3.0	2.8			
	WCMW06T304	●	9.525	3.97	0.4	3.0	4.4			
	WCMW06T308	□	9.525	3.97	0.8	3.3	4.4			

80° WP TYPE INSERTS WITH HOLE

Work Material	N	Non-ferrous Metal	PCD	Cutting Conditions (Guide) :					Geometry	Applicable Holder Page
				● : Stable Cutting ● : General Cutting ✦ : Unstable Cutting						
Shape	Order Number	MD220	Dimensions (mm)					Geometry	Applicable Holder Page	
			IC	S	RE	LE	D1			
 (With Breaker)	WPGT040202	●	6.35	2.38	0.2	2.9	2.8		E010	
	WPGT040204	●	6.35	2.38	0.4	2.9	2.8			
	WPGT060302	●	9.525	3.18	0.2	3.3	4.4			
	WPGT060304	●	9.525	3.18	0.4	3.3	4.4			

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
 (1 insert in one case)


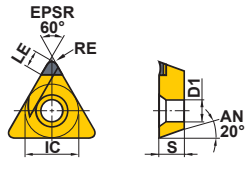

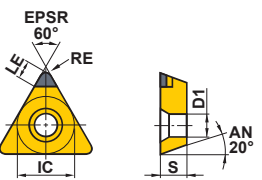
55° D ETYPE INSERTS WITH HOLE

Work Material	N	Non-ferrous Metal	PCD	Cutting Conditions (Guide) :					Geometry	Applicable Holder Page
				● : Stable Cutting ● : General Cutting ✦ : Unstable Cutting						
Shape	Order Number	MD220	Dimensions (mm)					Geometry	Applicable Holder Page	
			IC	S	RE	LE	D1			
 (With Breaker)	DEGX150402R-F	●	12.7	4.76	0.2	3.0	5.1	 Right hand insert shown.	C032	
	DEGX150402L-F	●	12.7	4.76	0.2	3.0	5.1			
	DEGX150404R-F	●	12.7	4.76	0.4	2.9	5.1			
	DEGX150404L-F	●	12.7	4.76	0.4	2.9	5.1			

PCD
B
PCD TURNING INSERTS

POSI 20°
WITH HOLE
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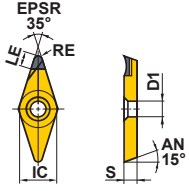
60° T ETYPE INSERTS WITH HOLE

Work Material	N	Non-ferrous Metal	PCD	Cutting Conditions (Guide) :					Geometry	Applicable Holder Page
				● : Stable Cutting ● : General Cutting ✦ : Unstable Cutting						
Shape	Order Number	MD220	Dimensions (mm)					Geometry	Applicable Holder Page	
			IC	S	RE	LE	D1			
 (With Breaker)	TEGX160302R	●	9.525	3.18	0.2	3.8	4.4	 Right hand insert shown.	C033 E043	
	TEGX160302L	●	9.525	3.18	0.2	3.8	4.4			
	TEGX160304R	●	9.525	3.18	0.4	3.7	4.4			
	TEGX160304L	●	9.525	3.18	0.4	3.7	4.4			
	TEGX160302	●	9.525	3.18	0.2	3.1	4.4	 Right hand insert shown.	C033 E043	
	TEGX160304	●	9.525	3.18	0.4	3.0	4.4			

PCD TURNING INSERTS [POSITIVE]



35° VD TYPE INSERTS WITH HOLE

Work Material	N	Non-ferrous Metal	PCD	Cutting Conditions (Guide) :					Geometry	Applicable Holder Page
				● : Stable Cutting	● : General Cutting	✦ : Unstable Cutting				
Shape	Order Number		MD220	IC	S	RE	LE	D1		
	VDGX160302R-F		●	9.525	3.18	0.2	3.1	4.5	 <p>Right hand insert shown.</p>	C034
	VDGX160302L-F		●	9.525	3.18	0.2	3.1	4.5		
	VDGX160304R-F		●	9.525	3.18	0.4	2.7	4.5		
	VDGX160304L-F		●	9.525	3.18	0.4	2.7	4.5		
(With Breaker)										

PCD
B

PCD TURNING INSERTS

POS
15°

WITH
HOLE

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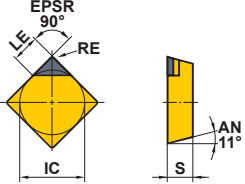
V

W

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(1 insert in one case)

B080


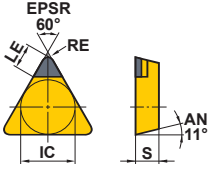
90° SP TYPE INSERTS WITHOUT HOLE

Work Material	N	Non-ferrous Metal	●	Cutting Conditions (Guide) :				Geometry	Applicable Holder Page
				● : Stable Cutting	● : General Cutting	✦ : Unstable Cutting			
Shape	Order Number	PCD	Dimensions (mm)				Geometry	Applicable Holder Page	
		MD220	IC	S	RE	LE			
	SPGN090302	●	9.525	3.18	0.2	3.8		-	
	SPGN090304	●	9.525	3.18	0.4	3.8			
	SPGN090308	●	9.525	3.18	0.8	3.8			
	SPGN090312	□	9.525	3.18	1.2	3.8			
	SPGN120304	●	12.7	3.18	0.4	3.8			
	SPGN120308	●	12.7	3.18	0.8	3.8			
	SPGN120312	●	12.7	3.18	1.2	3.8			

PCD
B
PCD TURNING INSERTS

POSI 11°
WITHOUT HOLE
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60° TP TYPE INSERTS WITHOUT HOLE

Work Material	N	Non-ferrous Metal	●	Cutting Conditions (Guide) :				Geometry	Applicable Holder Page
				● : Stable Cutting	● : General Cutting	✦ : Unstable Cutting			
Shape	Order Number	PCD	Dimensions (mm)				Geometry	Applicable Holder Page	
		MD220	IC	S	RE	LE			
	TPGN110302	●	6.35	3.18	0.2	2.8		E026	
	TPGN110304	●	6.35	3.18	0.4	2.6			
	TPGN110308	●	6.35	3.18	0.8	2.3			
	TPGN160302	●	9.525	3.18	0.2	3.1			
	TPGN160304	●	9.525	3.18	0.4	3.0			
	TPGN160308	●	9.525	3.18	0.8	2.7			
	TPGN160312	□	9.525	3.18	1.2	2.4			