SUMIBORON L

L1 to L152

Stock Markings and Symbols

●● mark: Standard stocked item
● mark: To be replaced with the new item featured on the same page
▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)
* mark: Semi-standard stock (please confirm stock availability)
○ mark: Stock or planned stock (please confirm stock availability)
Blank: Made-to-order item
— mark: Not available

SUMIBORON

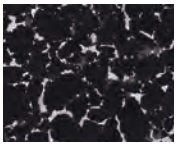
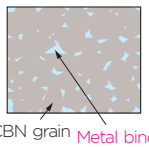
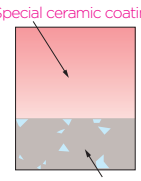
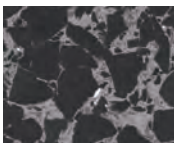
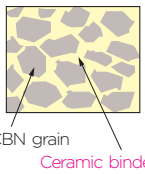
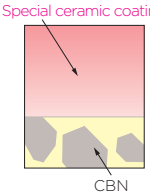
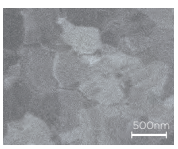
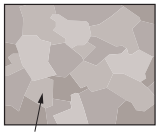
■ General Features

Sintered CBN tool "SUMIBORON", which has CBN (cubic boron nitride) - a hard material second only to diamond - as its main component, is sintered with a metal or special ceramic binder under ultra-high pressure and temperature.
SUMIBORON has high hardness, excellent thermal resistance and excellent properties including being unreactive to ferrous metals, enabling exotic alloys, hardened steel or hard cast iron to be machined. Excellent efficiency and longer tool life can also be achieved from high-speed finishing of cast iron.
"SUMIBORON" was first successfully developed in Japan by our company in 1977. Our product lineup also includes "Coated SUMIBORON" with a special ceramic coating and "SUMIBORON BINDERLESS" made by directly bonding CBN particles without a binder.

■ Features

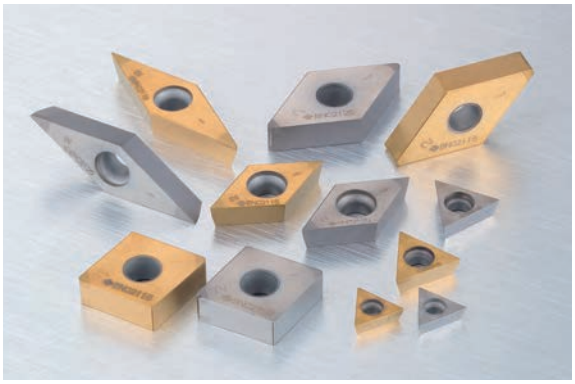
The sintered CBN tool SUMIBORON is mainly used for the machining of ferrous metals due to its low chemical reactivity with iron. There are 4 different classifications of SUMIBORON as follows:

■ Classifications/Applications

	Classifications	Structure	Diagram	Grade	Work Material
(A)	With a high CBN content, where each grain is fused together, this group can be used for the machining of high-hardness materials like cast iron, heat-resistant alloys and sintered alloys.			BN7125	K (FC) Sintered Alloy S
				BN7000	
				BN7115	Sintered Alloy
				BN7500	Sintered Alloy
				BNS8125	K (FC/FCD) S
				BNC8115	K (FC/FCD) S H
(B)	CBN grains are held together by a special ceramic binder with a strong binding force provides excellent wear resistance and toughness in the machining of hardened steel and cast iron.			BN1000	H
				BN2000	
				BN350	
				BNX10	
				BNX20	
				BN500	K (FC/FCD)
(C)	SUMIBORON with special ceramic coating. The CBN and coating exhibit the hardness, toughness, thermal resistance and oxidation resistance that tool material requires for excellent cutting performance.			BNC2105	H
				BNC2115	
				BNC2125	
				New BNC2135	
				BNC2010	
				BNC2020	
				BNC300	
				BNC200	
				BNC500	K (FCD)
(D)	Containing no binder but a structure of directly bonded nano- to sub-micron CBN particles which provides excellent hardness and thermal conductivity, making them highly efficient with long tool life when machining exotic alloys such as titanium alloys and cobalt-chrome alloys.			NCB100	K (FC) S Cemented Carbide Hard Brittle Materials

K Cast Iron S Exotic Alloy H Hardened Steel Sintered Alloy Sintered Alloy Cemented Carbide Cemented Carbide Hard Brittle Materials Hard Brittle Materials

Coated SUMIBORON series

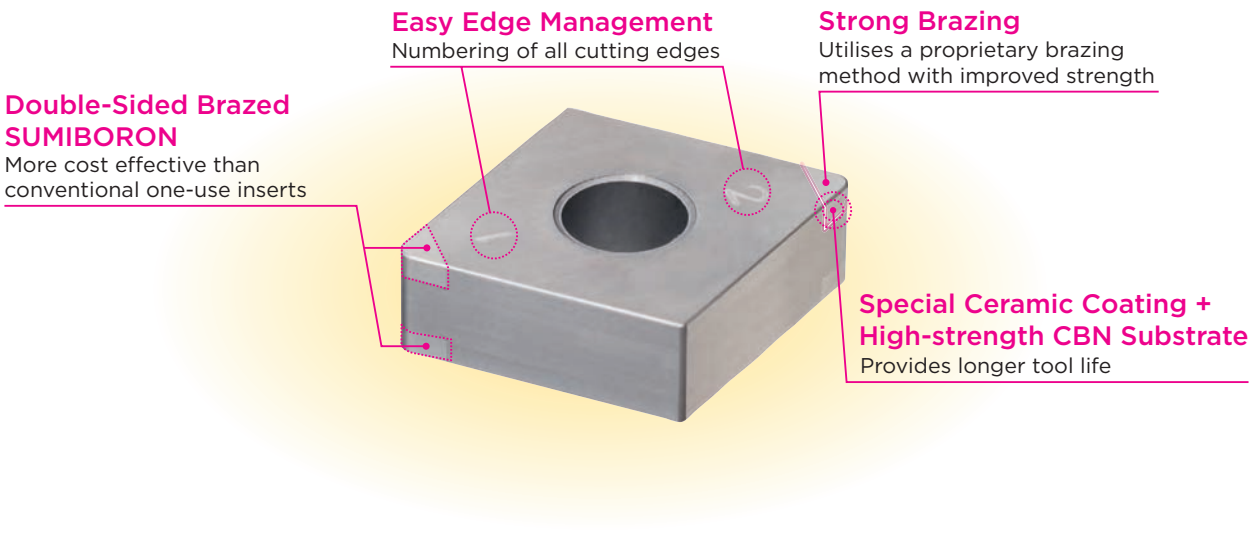


Achieves higher speed, higher efficiency and higher precision Coated SUMIBORON series

■ General Features

With a highly thermal-resistant and tough CBN substrate coupled with a special ceramic coating, this series caters to a wide variety of applications, with improved precision and longer tool life compared to conventional CBN.
Our extensive range, including more cost-effective, double-sided, multi-cornered one-use inserts, offers a selection of economical and easy-to-use tools.

■ Features



■ Cutting Edge Management

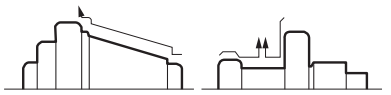
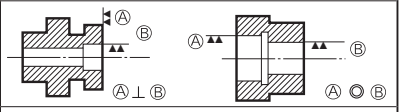
The edge numbers are still visible after machining, which makes the management of used cutting edges easy.

Grade Guidance H Hardened Steel

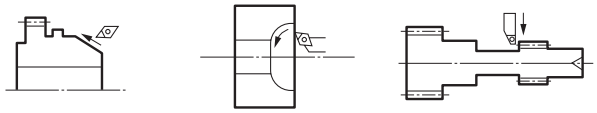
Hardened Steel Machining

● Advantages of machining hardened steel with SUMIBORON

Below is an analysis of the use of CBN tools compared to grinding. In addition to much lower investment in terms of machine cost and overhead cost due to the fact that a CNC lathe is cheaper than a grinding machine. In terms of surface finish quality, inserts can machine different profiles with the workpiece finishing equivalent to grinding. The chips from the turning process can also be collected and recycled to mitigate the environmental impact of sludge treatment for grinding. The workpieces shown at the bottom right of the table are shapes which will particularly benefit from cutting as opposed to grinding.

	Advantages	Remarks
Cost	Facility investment is low	· Cheaper machines · Reduced processes · Improved machining efficiency with less machining required
	Complex finishing in a single set-up	
Quality	Improved precision	
Environment	Environmentally-friendly	Sludge management → Chip control (Recyclable)

Machining Versatility with CBN



Taper Machining | Internal (Profile) Boring | Grooving/Profiling

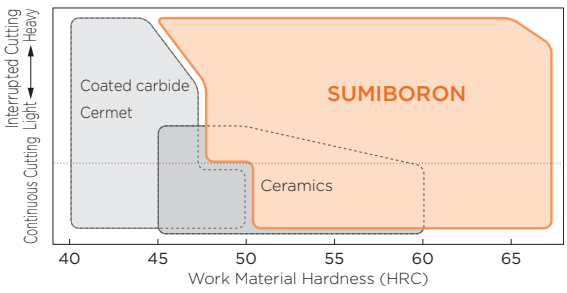
Recommended Grades

	Grade	Binder	Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
Coated	BNC2105	TiCN	45 to 50	3	30 to 32	1.1 to 1.2	TiAlBN Super Multi-Layered Coating	3	Grade with excellent wear resistant coating and a CBN substrate ideal for high-speed finishing applications.
	BNC2115	TiN	60 to 65	3	31 to 33	1.3 to 1.4	TiAlSiN Super Multi-layered Coating	3	Utilizing a coating with exceptional notch wear resistance and a tough CBN substrate to achieve stable and excellent surface finish.
	BNC2125	TiN	65 to 70	4	33 to 35	1.5 to 1.6	TiAlBN Super Multi-layered Coating	3	Combination of a tough CBN substrate and a coating that has a balance of wear resistance and toughness, to achieve even more stable machining.
	New BNC2135	TiN	60 to 65	1	33 to 35	1.6 to 1.7	TiAlN/ AlCrN	1	Utilises a fine, smooth coating with high-strength CBN to achieve long tool life in high-load interrupted machining.
	BNC2010	TiCN	50 to 55	2	30 to 32	1.1 to 1.2	TiCN Multi-layered Coating	2	Improved wear resistance from coating and substrate, achieves excellent and consistent surface roughness.
	BNC2020	TiN	70 to 75	5	34 to 36	1.4 to 1.5	TiAlN Multi-layered Coating	2	Utilising a tough substrate along with a highly wear-resistant and adhesive coating layer, to achieve long tool life in general-purpose to high-efficiency machining.
	BNC300	TiN	60 to 65	1	33 to 35	1.5 to 1.6	TiAlN	1	Suitable for finishing work materials with a mixture of interrupted and continuous machining sections.
	BNC200	TiN	65 to 70	4	33 to 35	1.4 to 1.5	TiAlN	3	A tough CBN substrate and a coating with high wear resistance provide a long tool life.
	BNC8115	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.15	TiAlN	2	Grade with 100% solid CBN structure, using PVD coating with excellent wear resistance to enable roughing operations.
Uncoated	BN1000	TiCN	40 to 45	1	27 to 31	0.9 to 1.0	-	-	Achieves ultimate wear and fracture resistance. Suitable for high-speed machining.
	BN2000	TiN	50 to 55	2	31 to 34	1.1 to 1.2	-	-	General-purpose grade for hardened steel machining with a high degree of fracture and wear resistance.
	BNX20	TiN	55 to 60	3	31 to 33	1.0 to 1.1	-	-	Achieves excellent crater wear resistance. Suitable for high-efficiency machining where cutting temperatures are high.
	BN350	TiN	60 to 65	1	33 to 35	1.5 to 1.6	-	-	Achieves ultimate cutting edge strength. Suitable for heavy interrupted machining.
	BNX10	TiCN	40 to 45	3	27 to 31	0.9 to 1.0	-	-	Excellent wear resistance. Suited for high-speed continuous machining.

TRS measured with test piece equivalent to the insert's CBN layer.

Recommended Range

● Work Material Hardness and Recommended Range for SUMIBORON



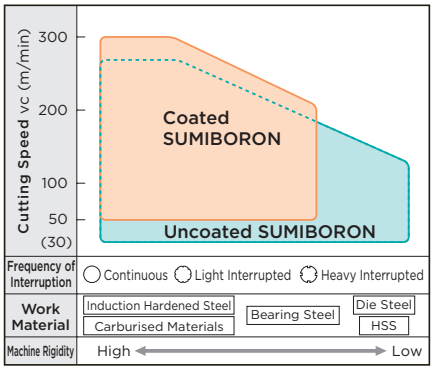
Grade Guidance H Hardened Steel

Applications

Coated SUMIBORON: 1st recommendation for hardened steel machining, excellent performance in high-speed, high-efficiency machining.

Uncoated SUMIBORON: Ideal for machining small parts and hardened steel where cutting speed is limited.

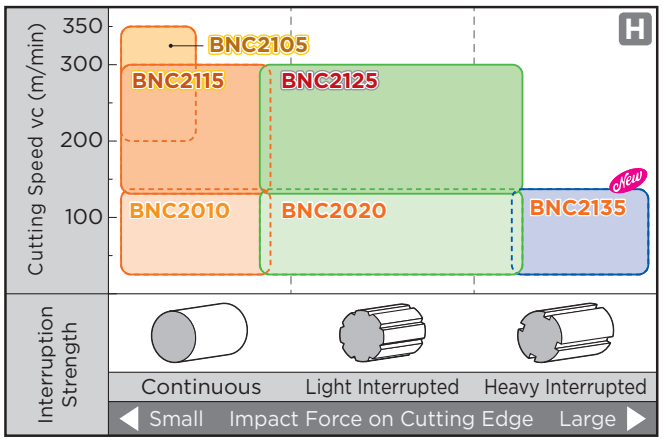
Series	Applications
Coated SUMIBORON	· First recommendation for hardened steel machining · Machining requiring high speed and high accuracy · Machining requiring high efficiency, such as carburised layer removal
Uncoated SUMIBORON	· Machining where cutting speed cannot be increased, such as small product machining · Machining of workpieces containing hard particles such as mold components · Machining with low tool rigidity



Application Range

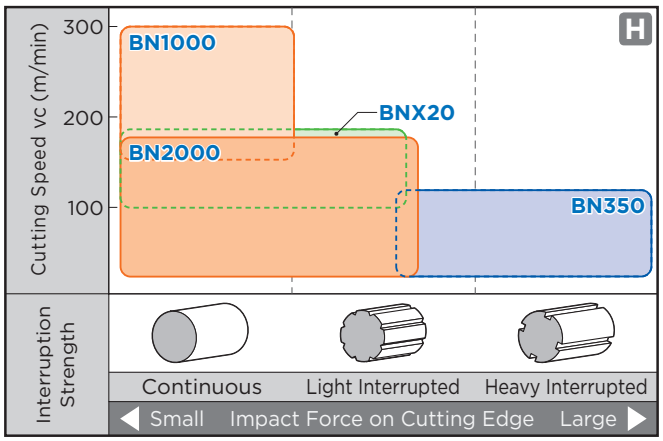
● Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel

Coated SUMIBORON



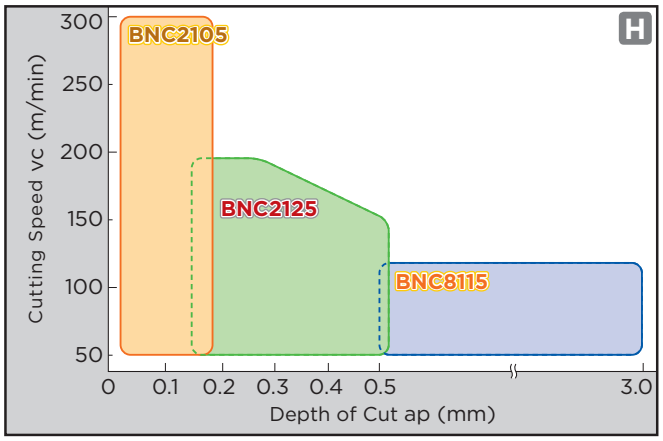
● Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel

Uncoated SUMIBORON



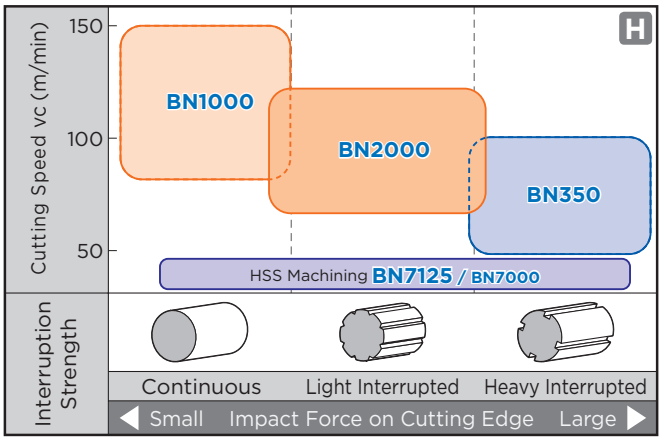
● Bearing Steel (SUJ2, etc.)

Coated SUMIBORON



● Die Steel (SKD11/SKD61, etc.), HSS

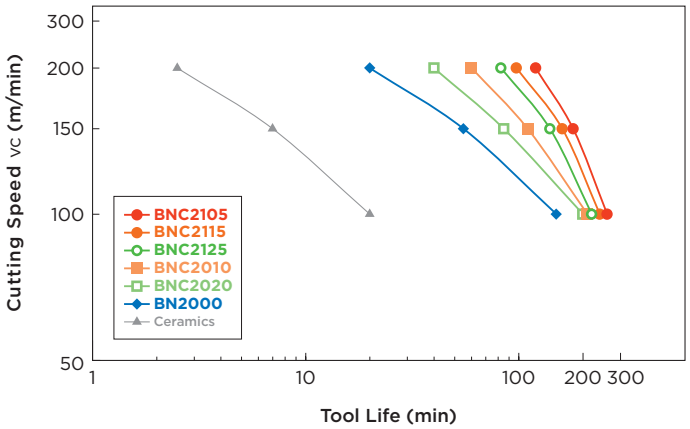
Uncoated SUMIBORON



Grade Guidance H

Hardened Steel

Cutting Performance (Continuous Cutting)

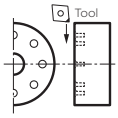


Tool Life Criterion: VBmax = 0.1mm

Work Material	: SCM415H (58 to 62 HRC)
Tool Cat. No.	: DNGA150408
Cutting Conditions	: f = 0.1mm/rev, ap = 0.2mm Wet

Cutting Performance (Interrupted Cutting)

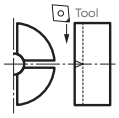
[Light Interrupted: Face with Drilled Holes]



Tool Grade	Tool Life Ratio 100 200
BNC2125	
BNC2135	
BN350	

Work Material	: SCM415 (58 to 62 HRC)
Tool Cat. No.	: CNGA120408
Cutting Conditions	: vc = 120m/min, f = 0.15mm/rev, ap = 0.15, Dry

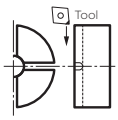
[Light Interrupted - V-Grooved Face]



Tool Grade	Tool Life Ratio 100 200
BNC2125	
BNC2135	
BN350	

Work Material	: SKD11 (58 to 62 HRC)
Tool Cat. No.	: CNGA120408
Cutting Conditions	: vc = 60m/min, f = 0.07mm/rev, ap = 0.3, Dry

[Heavy Interrupted - U-Grooved Face]



Tool Grade	Tool Life Ratio 100 200
BNC2125	
BNC2135	
BN350	

Work Material	: SCM415 (58 to 62 HRC)
Tool Cat. No.	: CNGA120408
Cutting Conditions	: vc = 120m/min, f = 0.1mm/rev, ap = 0.2, Dry

Grade Guidance K Cast Iron

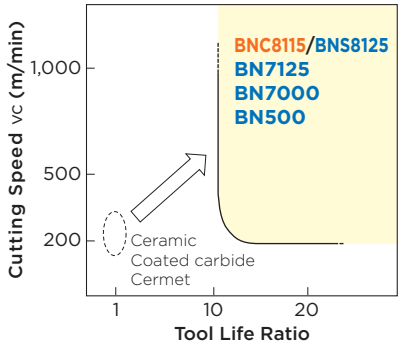
Cast Iron Machining

● Advantages of machining cast iron with SUMIBORON

Compared with conventional tools, a longer tool life for high speed machining is realized, machining efficiency is improved and better wear resistance, a sharper edge, excellent surface roughness and dimensional tolerance are achieved. SUMIBORON is ideal for finishing of grey cast iron and special cast iron through FCD (ductile cast iron) and heat-treated high-grade cast iron such as ADI.

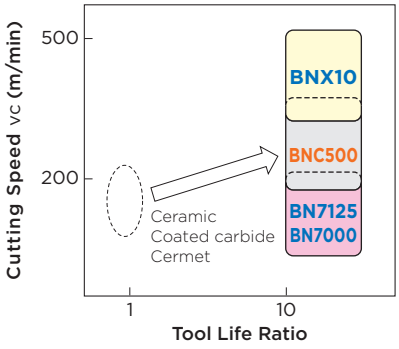
High-speed Machining

● Grey Cast Iron

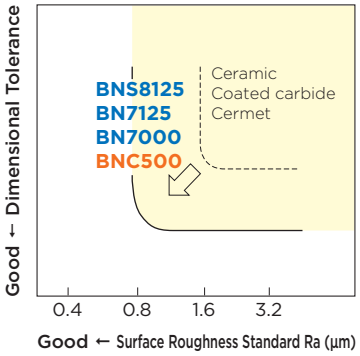


High-speed Machining

● Ductile Cast Iron



High-precision Machining



Recommended Grades

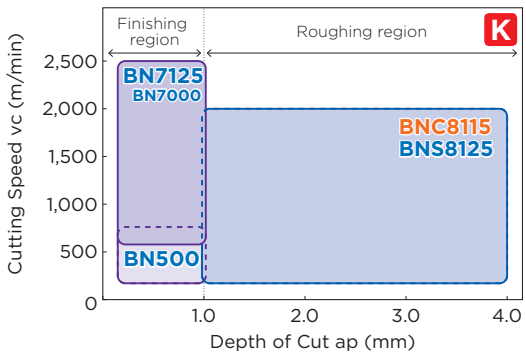
	Grade	Binder	CBN Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
Uncoated	BNS8125	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.15	—	—	Grade with 100% solid CBN structure that exhibits excellent wear and fracture resistance.
Uncoated	BN7125	Co Compound	90 to 95	2	41 to 44	1.9 to 2.0	—	—	General-purpose grade with excellent wear resistance, fracture resistance, and thermal shock resistance, suitable for machining of cast iron and exotic alloys.
Uncoated	BN7000	Co Compound	90 to 95	2	41 to 44	1.8 to 1.9	—	—	Grade with improved wear and fracture resistance in machining cast iron and exotic alloys.
Uncoated	BN500	TiC	65 to 70	6	32 to 34	1.0 to 1.1	—	—	Grade optimised for cast iron machining. Provides superior wear and fracture resistance.
Coated	BNC8115	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.15	TiAlN	2	Grade with 100% solid CBN structure using PVD coating with excellent wear resistance to enable roughing operations.
Coated	BNC500 (For Ductile Cast Iron)	TiC	60 to 65	4	32 to 34	1.1 to 1.2	TiAlN	3	Suitable for machining of hard-to-cut cast iron, thanks to the highly wear-resistant substrate and coating.

TRS measured with test piece equivalent to the insert's CBN layer.

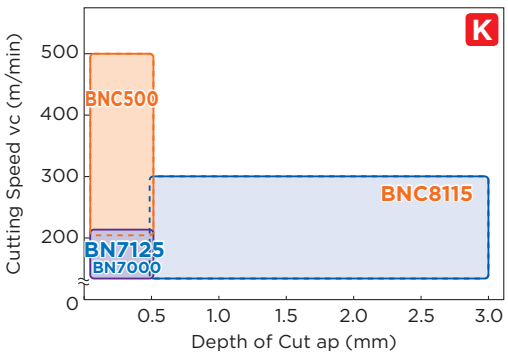
Refer to pages L9 to L11 for machining of sintered components, rolls, hard facing alloys, hardened stainless steel, titanium alloys, and heat-resistant alloys.

Application Range

● Grey Cast Iron



● Ductile Cast Iron



● Special Cast Iron

Work Material	Hardness (HB)	Work Material Structure	Examples	Cutting Speed vc (m/min) 100 200 300 350 400 500
Ni-resistant Cast Iron	150 to 200	Austenite	Piston ring	BNC500
High-Cr Cast Iron	250 to 350	Austenite	Pump component	BNS8125
FCV (CGI)	400 to 580	Pearlite	Engine blocks Cylinder heads Brake discs	BNC500

Grade Guidance K Cast Iron

Recommended Cutting Conditions

● Turning

Work Material		Recommended Grades	Recommended Cutting Conditions		
Material	Standard (Hardness)		Cutting Speed vc (m/min) 100 – 1,000 – 2,000	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Grey Cast Iron	FC200 to FC300 (HB ≤ 230)	BN7125 / BN7000	500 – 2,000	0.1 to 0.5	≤ 1.0
		BNC8115 / BNS8125	200 – 2,000	0.1 to 1.0	≤ 4.0
		BN500	200 – 700	0.1 to 0.5	≤ 1.0
Alloy Cast Iron	(HB ≥ 200)	BN7125 / BN7000	200 – 800	0.1 to 0.4	≤ 0.5
		BNS8125	200 – 1,000	0.1 to 0.8	≤ 2.0
Ductile Cast Iron	FCD450 to FCD550	BNC8115	80 – 300	0.1 to 0.5	≤ 3.0
		BN7125 / BN7000	80 – 200	0.1 to 0.4	≤ 0.6
		BNC500	150 – 500	0.1 to 0.4	≤ 0.5
	FCD600 to FCD700	BNC500	200 – 400	0.1 to 0.4	≤ 0.5
Vermicular Cast Iron FCV(CGI)	—	BNC500	200 – 500	0.1 to 0.4	≤ 0.4

Cutting Oil: Wet cut (BNC8115/BNS8125 can also be used dry)

● Milling

Work Material		Recommended Grades	Recommended Cutting Conditions		
Material	Standard (Hardness)		Cutting Speed vc (m/min) 100 – 1,000 – 2,000	Feed Rate fz (mm/t)	Depth of Cut ap (mm)
Grey Cast Iron	FC200 to FC300 (HB ≤ 200)	BN7125 / BN7000	800 – 2,000	0.10 to 0.30	≤ 0.5
		BNS8125	800 – 1,500	0.05 to 0.20	≤ 3.0

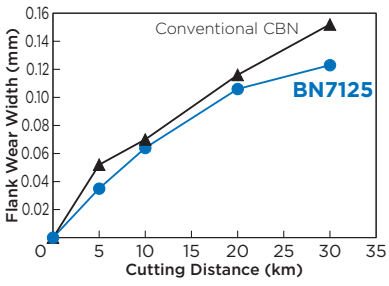
Cutting Oil: Dry cut

Cutting Performance

Recommended Grades

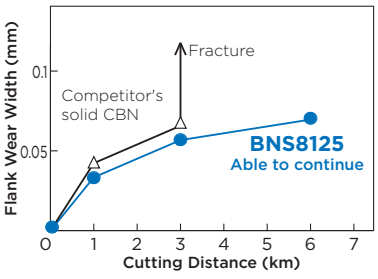
Grey Cast Iron Turning BN7125/BN7000/BNC8115/BNS8125/BN500

● High Speed Continuous Cutting



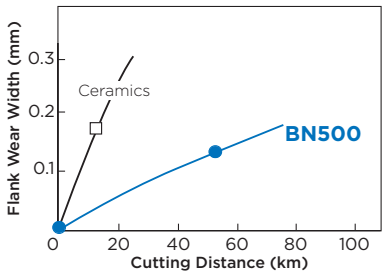
Work Material : FC300 (Pearlite)
Tool Cat. No. : 2NU-CNGA120408
Cutting Conditions : vc = 800m/min, f = 0.15mm/rev
ap = 0.2mm Wet

● Interrupted Cutting



Work Material : FC300 (Pearlite)
Tool Cat. No. : SNGN090308
Cutting Conditions : vc = 600m/min, f = 0.3mm/rev
ap = 0.5mm Dry

● Continuous Cutting

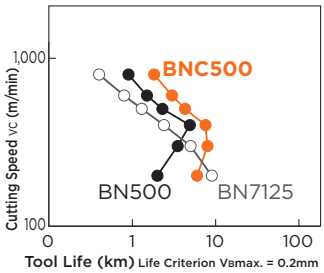


Work Material : FC300 (Pearlite)
Tool Cat. No. : SNGN120412
Cutting Conditions : vc = 500m/min, f = 0.3mm/rev
ap = 0.15mm Wet

Recommended Grades

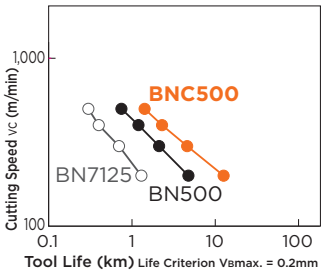
Ductile Cast Iron Turning BNC500

● FCD450



Work Material : FCD450 (Continuous Cutting)
Cutting Conditions : f = 0.2mm/rev, ap = 0.2mm Wet

● FCD700

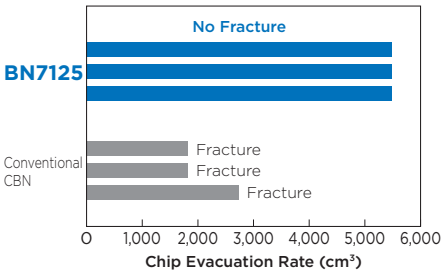


Work Material : FCD700 (Continuous Cutting)
Cutting Conditions : f = 0.2mm/rev, ap = 0.2mm Wet

Recommended Grades

Grey Cast Iron Milling BNC8115/BNS8125 BN7125/BN7000

● Cast Iron



Work Material : FC250 (Pearlite)
Tool Cat. No. : FMU4080R SNEW1203ADTR
Cutting Conditions : vc = 1,500m/min, fz = 0.13mm/t, ap = 0.3mm, Residual Wet

Grade Guidance

Sintered Alloy

Sintered Component Machining

● **Advantages of machining sintered components with SUMIBORON**

SUMIBORON, with its excellent wear resistance and cutting edge integrity, suffers less cutting edge wear than cemented carbide or cermet, thereby suppressing burrs and chipping on the workpiece to achieve good machining precision and surface finish.

Sintered Components

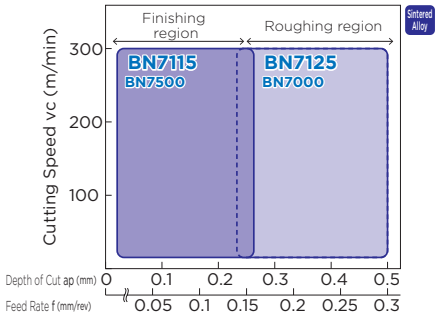
Recommended Grades

Grade	Binder	CBN Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
BN7115	Co Compound	90 to 95	1	41 to 44	2.2 to 2.3	—	—	Grade with the best cutting edge sharpness and fracture resistance, suitable for finishing of sintered alloy.
BN7500	Co Compound	90 to 95	1	41 to 44	2.0 to 2.1	—	—	Grade maintaining good cutting edge sharpness, suitable for finishing of sintered alloy.
BN7125	Co Compound	90 to 95	2	41 to 44	1.9 to 2.0	—	—	Grade with the highest fracture resistance and wear resistance, suitable for roughing of sintered alloy.
BN7000	Co Compound	90 to 95	2	41 to 44	1.8 to 1.9	—	—	Grade exhibiting improved wear and fracture resistance in roughing of sintered alloy.

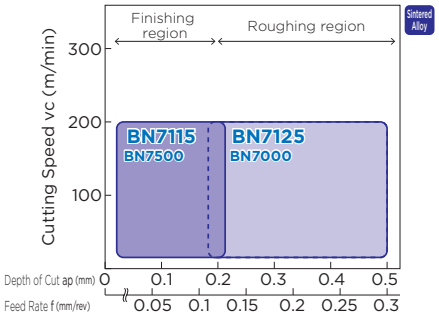
TRS measured with test piece equivalent to the insert's CBN layer.

Application Range

● General Sintered Alloy (50 to 90HRB)

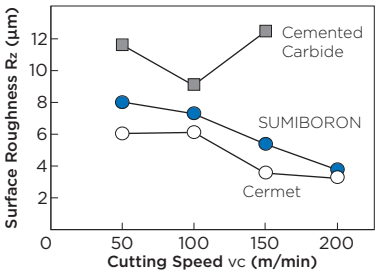


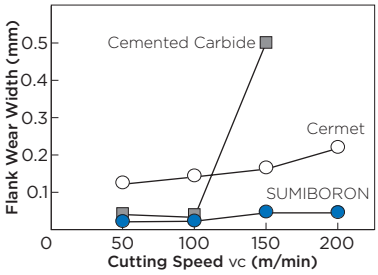
● High-density/Sintered Alloy (30 to 65 HRC)

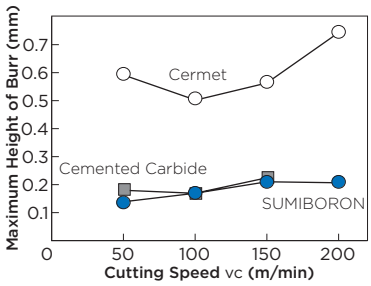


Cutting Performance

● Grade Performance Comparison







Work Material	: Sintered Alloy F-08C2 equivalent
Machining Details	: ø80-ø100 heavy interrupted facing with grooves and drilled holes (after 40 passes)
Tool Cat. No.	: TNGA160404
Cutting Conditions	: f = 0.1mm/rev, ap = 0.1mm Wet

For general sintered alloy, cemented carbide and cermet grades can perform up to vc = 100m/min. However, around vc = 120m/min, wear becomes rapid and surface roughness deteriorates with increased burrs. On the other hand, SUMIBORON exhibits stability and superior wear resistance, burr prevention and surface roughness, especially at high speeds.

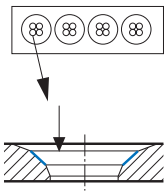
Valve Seat Ring (VSR)

*VSR has both (Intake: IN) and (Exhaust: EX) with the exhaust generally being hardened.

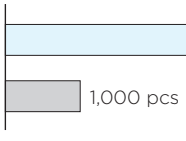
Recommended Cutting Conditions

Grade	Work Material Hardness (HV)	Recommended Cutting Conditions Cutting Speed vc (m/min) 20 40 60 80 100 120 140	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
BN7115	< 300		0.03 to 0.2	0.05 to 0.5
BN350	≥ 300		0.03 to 0.2	0.05 to 0.5

Application Examples



With superior fracture resistance, BN7115 can achieve three times conventional tool life



Work Material	: Sintered Alloy
Tool Cat. No.	: 3NU-TPGW110308LF
Cutting Conditions	: vc = 120m/min, f = 0.08mm/rev Wet

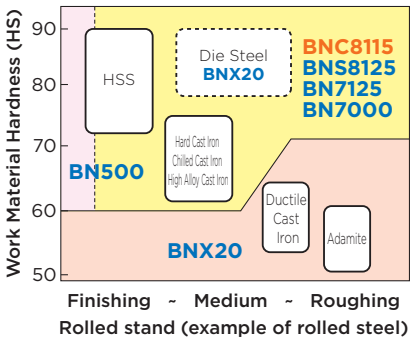
Grade Guidance H Hardened Steel K Cast Iron S Exotic Alloy

Roll Machining

● Advantages of machining rolls with SUMIBORON

SUMIBORON enables the machining of high-hardness rolls that were previously difficult to machine with conventional tools, drastically improving machining efficiency.

Recommended Grades



Recommended Cutting Conditions

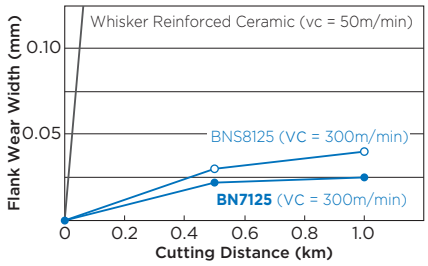
Work Material		Recommended Cutting Conditions		
Category	Hardness (HS)	Cutting Speed vc (m/min) 20 40 60 80 100 120 140	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Adamite	≥ 40		0.1 to 0.5	0.2 to 3.0
Chilled Cast Iron	≥ 60		0.1 to 0.5	0.2 to 3.0
High-alloy Cast Iron	≥ 60		0.1 to 0.5	0.2 to 3.0
HSS	≥ 70		0.1 to 0.4	0.1 to 3.0

Hard Facing Alloy Machining

● Advantages of machining hard facing alloy with SUMIBORON

SUMIBORON enables the machining of high-hardness facing alloys that were previously difficult to machine with conventional tools, drastically improving machining efficiency.
The first recommended grade is BN7125, followed by BNS8125.

Cutting Performance



Work Material : Colmonoy No.6 (NiCr-Based Self-Fluxing Alloy)
Tool Cat. No. : SNGN090308
Cutting Conditions : f = 0.1mm/rev, ap = 0.2mm Dry

Recommended Cutting Conditions

Work Material		Recommended Cutting Conditions		
Category	Material	Cutting Speed vc (m/min) 50 100 200 300	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Ni-Based Self-Fluxing Alloy	Colmonoy No.6		0.05 to 0.2	0.1 to 3.0
Co-Based Self-Fluxing Alloy	Stellite		0.05 to 0.2	0.1 to 1.0

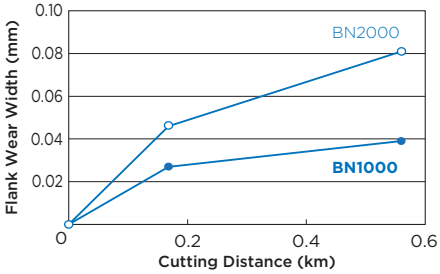
● BN7125 has a long tool life and minimal wear with high speed cutting

Hardened Stainless Steel Machining

● Advantages of machining hardened stainless steel with SUMIBORON

SUMIBORON enables the machining of hardened stainless steel, previously difficult to machine with conventional tools, drastically improving machining efficiency.
The first recommended grade is BN1000. When strength is required, we recommend BN2000.

Cutting Performance



Work Material : SUS440C (59 to 61HRC, continuous)
Tool Cat. No. : 2NU-CNGA120408
Cutting Conditions : vc = 200m/min, f = 0.1mm/rev, ap = 0.1mm Wet

Recommended Cutting Conditions

Work Material	Recommended Cutting Conditions		
Category	Cutting Speed vc (m/min) 50 100 200 300	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Hardened Stainless Steel		0.03 to 0.2	0.03 to 0.3

Grade Guidance S Exotic Alloy

Titanium Alloy Machining

● **Advantages of machining titanium alloy with SUMIBORON**

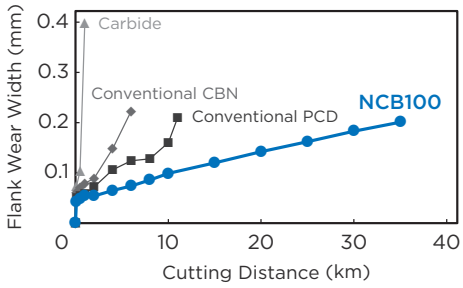
SUMIBORON enables high speed machining of titanium alloys that were previously difficult to machine with conventional tools, drastically improving machining efficiency.

Recommended Grades

Grade	Binder	CBN Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
NCB100	—	100	Up to 0.5	51 to 54	1.8 to 1.9	—	—	Ideal for high-efficiency finishing of titanium alloy.

TRS measured with test piece equivalent to the insert's CBN layer.

Cutting Performance



Work Material : Titanium Alloy (Ti-6Al-4V)
Tool Cat. No. : CNGA120408
Cutting Conditions : VC = 150m/min, f = 0.15mm/rev, ap = 0.5mm
Wet (High Pressure Coolant)

Recommended Cutting Conditions

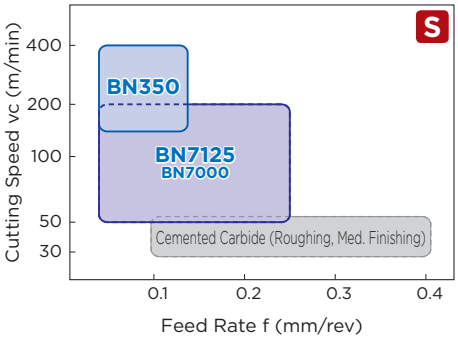
Work Material		Grade	Recommended Cutting Conditions Min. - **Optimum** - Max.		
Composition	Hardness (HRC)		Cutting Speed vc (m/min) 50 100 150 200 250 300	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Ti-6Al-4V	30 - 35	NCB100		0.05-**0.15**-0.20	0.10-**0.30**-0.50
Ti-5Al-5V-5Mo-3Cr	32 - 38	NCB100		0.05-**0.10**-0.20	0.10-**0.30**-0.50
Ti-10V-2Fe-3Al	32 - 38	NCB100		0.05-**0.10**-0.20	0.10-**0.30**-0.50

Heat-resistant Alloy Machining

● **Advantages of machining heat-resistant alloy with SUMIBORON**

SUMIBORON provides long tool life in the finishing of heat-resistant alloys.

Recommended Grades

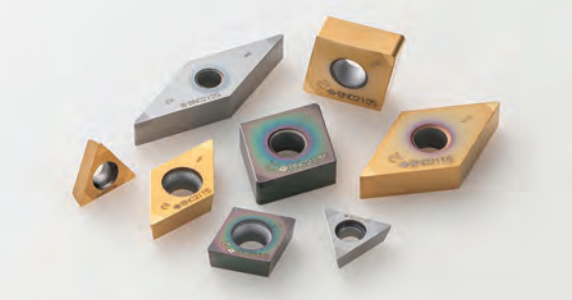


SUMIBORON is best suited for finishing of heat-resistant alloy

Recommended Cutting Conditions

Work Material		Recommended Cutting Conditions		
Category	Material	Cutting Speed vc (m/min) 50 100 150 200	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Ni-based Heat-resistant Alloy	Inconel 718		0.05 to 0.2	0.1 to 1.0
Co-Based Heat-Resistant Alloy	Stellite		0.05 to 0.2	0.1 to 1.0

BNC2105/BNC2115/BNC2125/BNC2135 H Hardened Steel



The Pinnacle of High Accuracy/ High-efficiency Cutting

■ Features

Coated SUMIBORON, our first recommendation for hardened steel machining, improves productivity in all types of hardened steel machining applications.
The BNC2100 series offers high performance in high-speed, high-feed machining.

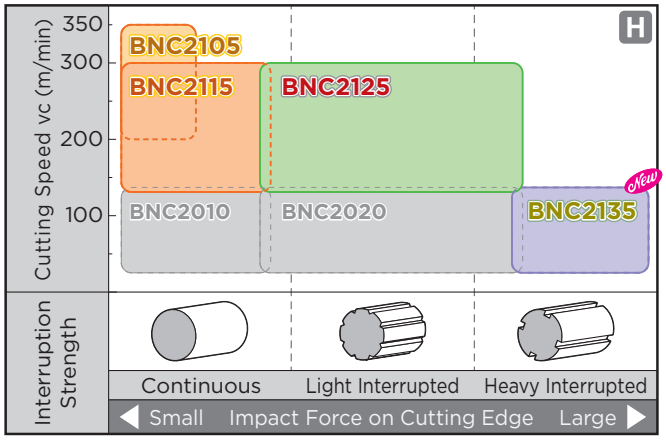
VIDEO OF CUTTING BNC2105 | VIDEO OF CUTTING BNC2115 / BNC2125 | VIDEO OF CUTTING BNC2135

■ Lineup

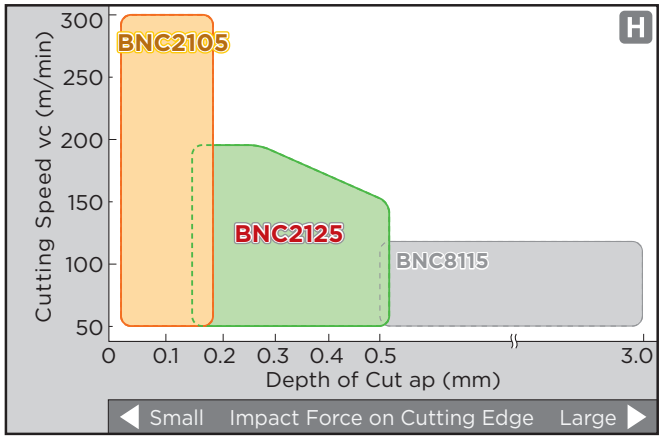
- **BNC2105** · **Realises outstanding wear resistance in high-speed machining of hardened steel**
  Excellent wear resistant coating and CBN substrate, achieve stable and long tool life in high-speed machining.
- **BNC2115** · **The ultimate in high-precision machining of hardened steel**
  Utilising a thick coating with exceptional notch wear resistance and a tough CBN substrate to achieve stable and excellent surface finish.
- **BNC2125** · **First recommendation for hardened steel machining**
  Combination of a tough CBN substrate and a thick coating that has a balance of wear resistance and toughness, to achieve stable machining in a wide range of applications.
- **BNC2135** New · **Achieves long and stable tool life in heavy interrupted cutting of hardened steel**
  Utilising a highly fracture-resistant coating and a high-strength substrate to achieve long and stable tool life in interrupted machining.

■ Application Range

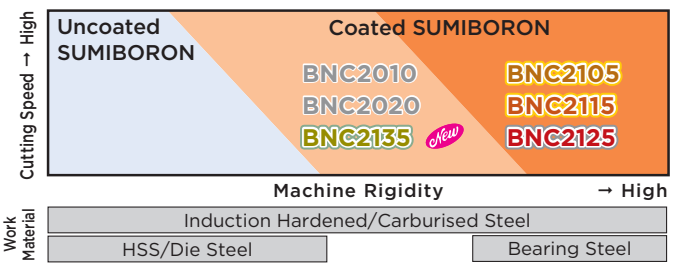
● Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



● Bearing Steel (SUJ2, etc.)



■ Differentiation



■ Recommended Cutting Conditions

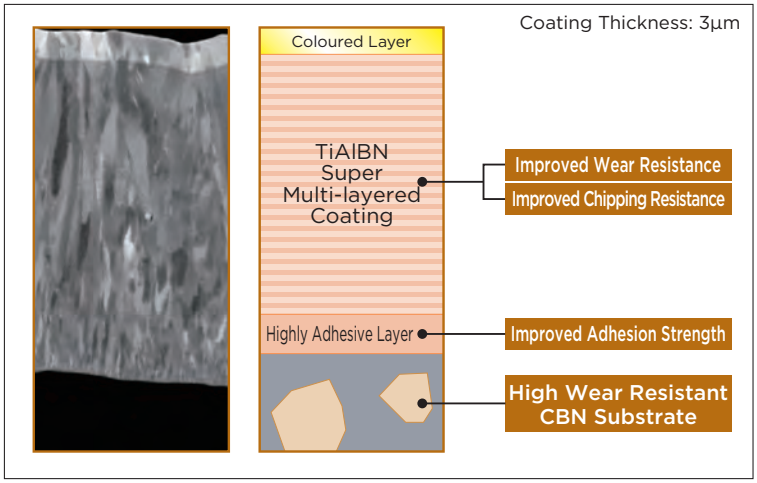
Grade	Cutting Speed vc (m/min) Min.-**Optimum**-Max.	Feed Rate f (mm/rev) Min.-**Optimum**-Max.	Depth of Cut ap (mm) Min.-**Optimum**-Max.
BNC2105	150 - **200** - 350	0.03 - **0.10** - 0.15	0.03 - **0.15** - 0.20
BNC2115	110 - **180** - 300	0.03 - **0.10** - 0.20	0.03 - **0.20** - 0.35
BNC2125	110 - **160** - 300	0.05 - **0.20** - 0.40	0.05 - **0.30** - 0.50
BNC2135	50 - **100** - 150	0.03 - **0.10** - 0.20	0.03 - **0.20** - 0.30

BNC2105/BNC2115/BNC2125/BNC2135

BNC2105

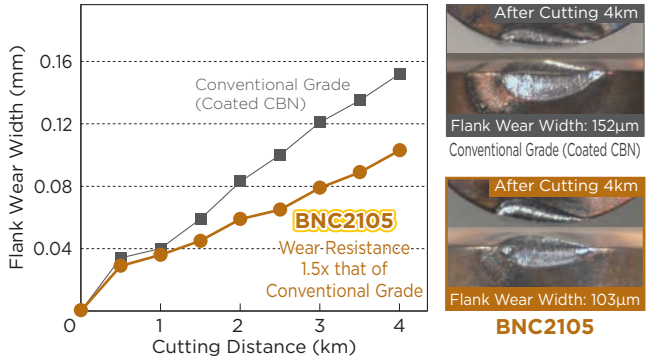
- Thick layer of super multi-layered ultra-fine TiAlBN coating with high strength and high hardness coupled with a highly thermal- and wear-resistant substrate to maintain excellent finished surface precision

■ CBN Substrate and Coating Structure



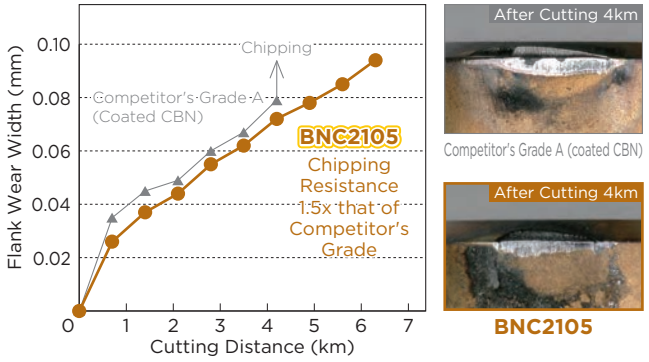
■ Cutting Performance

● BNC2105 Continuous Cutting (Wear Resistance)



Work Material	: SUJ2 (58 to 62 HRC)
Tool Cat. No.	: 4NC-DNGA150408
Cutting Conditions	: vc = 200m/min f = 0.1mm/rev ap = 0.1mm Wet

● BNC2105 Continuous Cutting (Wear Resistance)

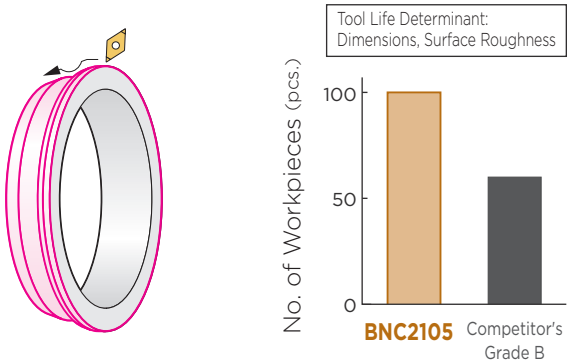


Work Material	: SCM415H (58 to 62 HRC)
Tool Cat. No.	: 4NC-DNGA150408
Cutting Conditions	: vc = 250m/min f = 0.06mm/rev ap = 0.1mm Wet

■ Application Examples

SUJ2 Bearing Steel Bearing Inner Ring (60HRC) BNC2105 H

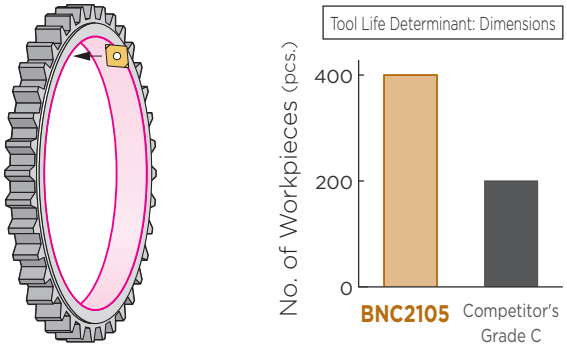
BNC2105 maintains excellent wear resistance and surface roughness for a long time compared to competitor's coated CBN



Tool: 4NC-DNGA150408 (BNC2105)
Cutting Conditions BNC2105 : vc = 200m/min f = 0.045mm/rev ap = 0.1mm Wet
Competitor's Grade B : vc = 150m/min f = 0.010mm/rev ap = 0.1mm Wet

SCr420H Hardened Steel Ring Gear (60HRC) BNC2105 H

BNC2105 maintains excellent wear resistance for a long time compared to competitor's coated CBN



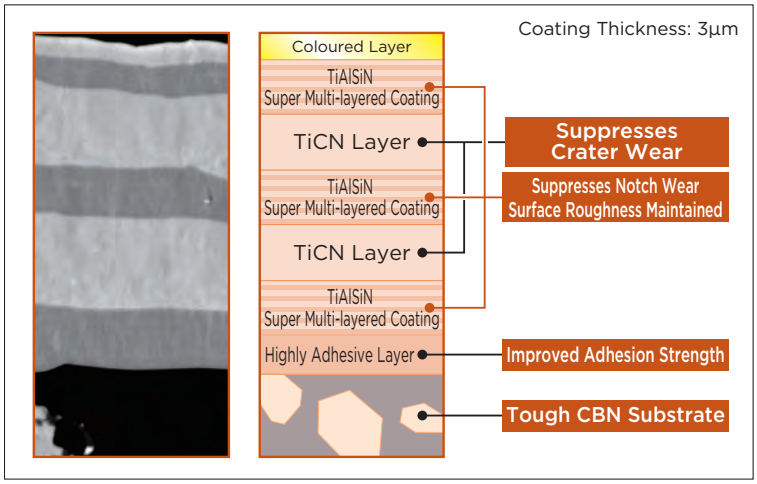
Tool: 4NC-CNGA120412 (BNC2105)
Cutting Conditions: vc = 200m/min f = 0.10mm/rev ap = 0.10mm Wet

BNC2105/BNC2115/BNC2125/BNC2135 H Hardened Steel

BNC2115

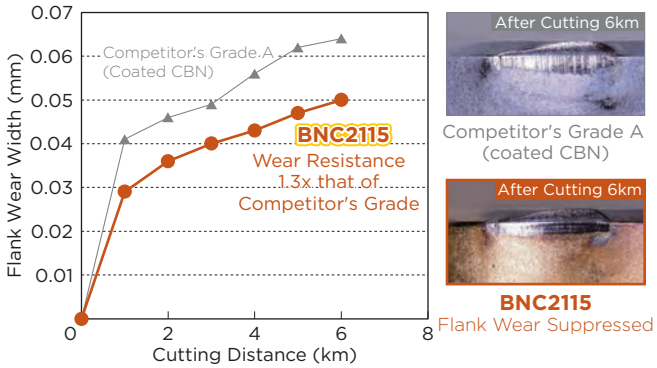
- Thick layer of high-strength super multi-layered TiAlSiN coating with highly heat-resistant TiCN coating on a tough substrate to achieve excellent surface finish quality

■ CBN Substrate and Coating Structure



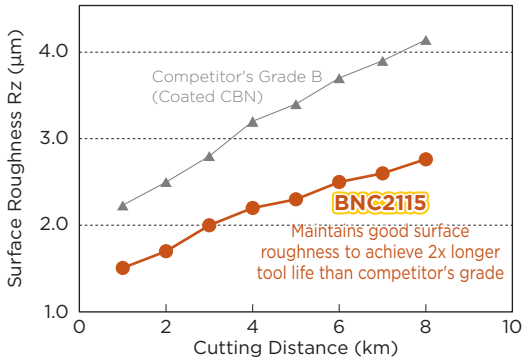
■ Cutting Performance

● BNC2115 Continuous Cutting (Wear Resistance)



Work Material	: SCM415H (58 to 62 HRC)
Tool Cat. No.	: 4NC-DNGA150408
Cutting Conditions	: vc = 200m/min f = 0.1mm/rev ap = 0.15mm Wet

● BNC2115 Continuous Cutting (Machined Surface Roughness)

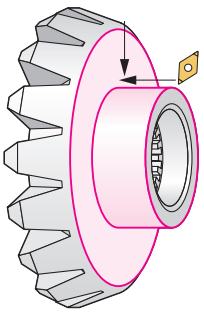


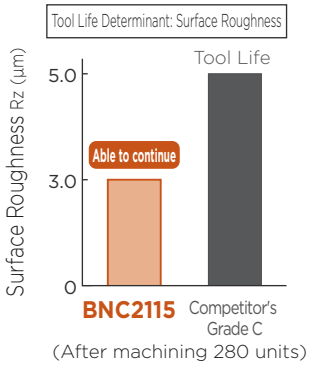
Work Material	: SCM415H (58 to 62 HRC)
Tool Cat. No.	: 4NC-DNGA150408
Cutting Conditions	: vc = 200m/min f = 0.1mm/rev ap = 0.15mm Wet

■ Application Examples

SCM415H Hardened Steel Gear (60HRC) BNC2115 H

Compared to competitor's coated CBN, BNC2115 reduces flank wear width by 30%, able to continue with good surface roughness



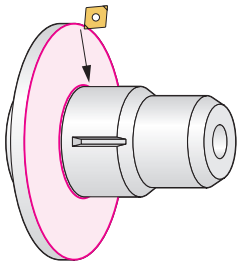


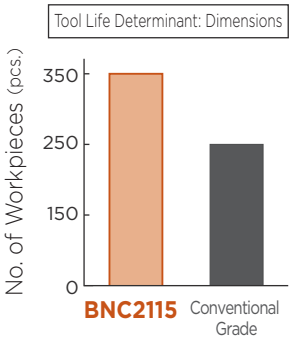
(After machining 280 units)

Tool: 4NC-DNGA150404 (BNC2115)
Cutting Conditions: vc = 160m/min f = 0.10mm/rev ap = 0.25mm Wet

SCr420H Hardened Steel CVT Component (58HRC) BNC2115 H

Compared to conventional coated CBN, BNC2115 has improved fracture life due to excellent crater wear resistance

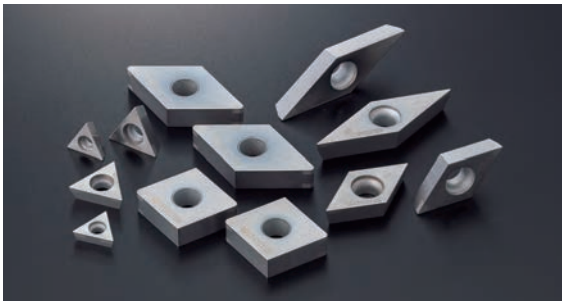




Tool: 4NC-CNGA120412 (BNC2115)
Cutting Conditions: vc = 170m/min f = 0.35mm/rev ap = 0.3mm Wet

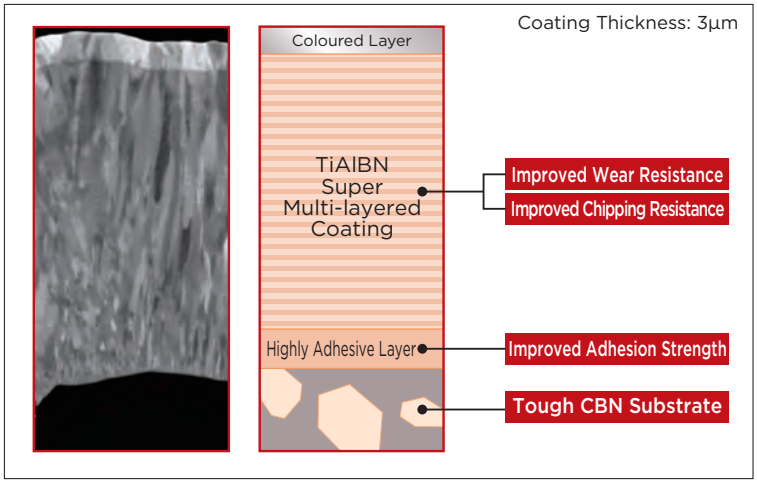
BNC2105/BNC2115/BNC2125/BNC2135

BNC2125



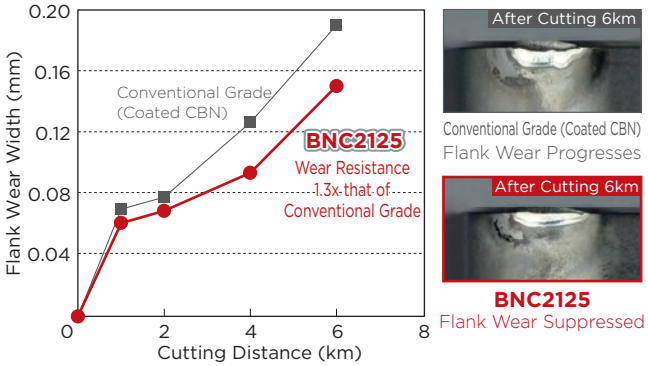
- Thick layer of super multi-layered ultra-fine TiAlBN coating with high strength and high hardness coupled with a tough substrate achieves high performance in a wide range of applications

■ CBN Substrate and Coating Structure



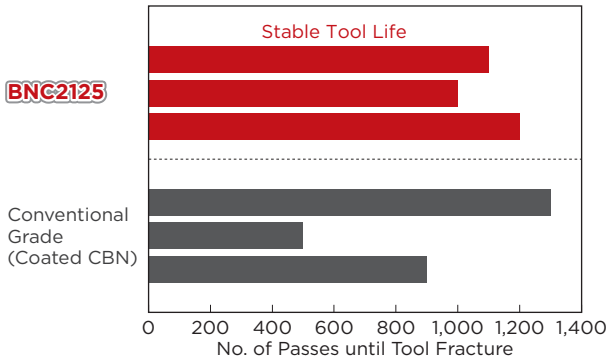
■ Cutting Performance

● BNC2125 Continuous Cutting (Wear Resistance)



Work Material	: SUJ2 (58 to 62 HRC)
Tool Cat. No.	: 4NC-DNGA150408
Cutting Conditions	: vc = 150m/min f = 0.1mm/rev ap = 0.2mm Wet

● BNC2125 High-load Cutting (Fracture Resistance)

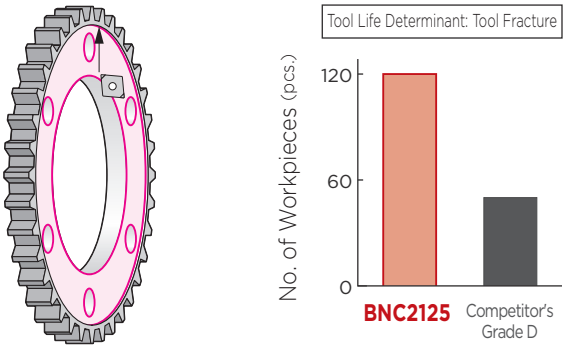


Work Material	: SUJ2 (58 to 62 HRC)
Tool Cat. No.	: 4NC-DNGA150408
Cutting Conditions	: vc = 150m/min f = 0.15mm/rev ap = 0.5mm 63m/time Wet

■ Application Examples

SCr420H Hardened Steel Ring Gear (60HRC) BNC2125 H

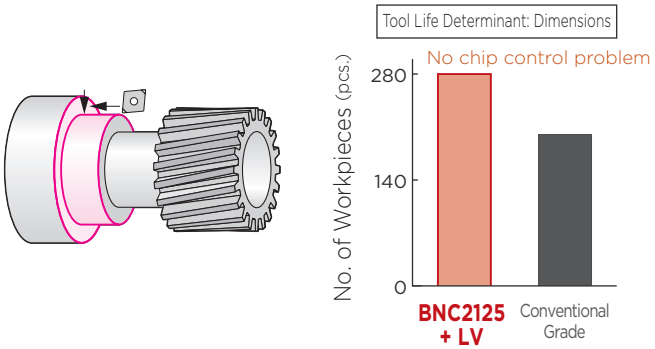
BNC2125 suppresses fractures due to crater wear and realises at least double the tool life



Tool: 4NC-CNGA120412 (BNC2125)
Cutting Conditions: vc = 150m/min f = 0.2mm/rev ap = 0.3mm
Dry

S15C Hardened Steel Sun Gear (60HRC) BNC2125 H

BNC2125 BREAK MASTER LV type offers long tool life and resolves chip control problems



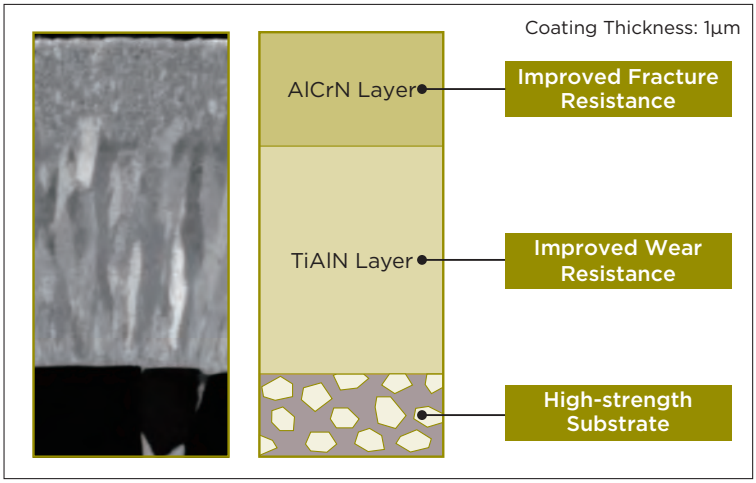
Tool: 4NC-CNGG120408N-LV (BNC2125)
Cutting Conditions: vc = 190m/min f = 0.13mm/rev ap = 0.30mm
Wet

BNC2105/BNC2115/BNC2125/BNC2135 H Hardened Steel

BNC2135 New

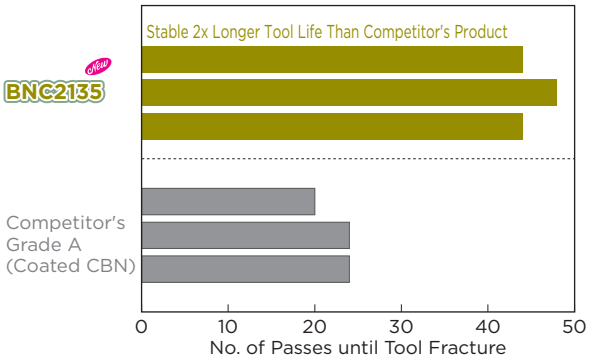
· Utilising new coating technology to create fine, high-strength AlCrN and TiAlN layers on a high-strength substrate to achieve high fracture resistance

■ CBN Substrate and Coating Structure



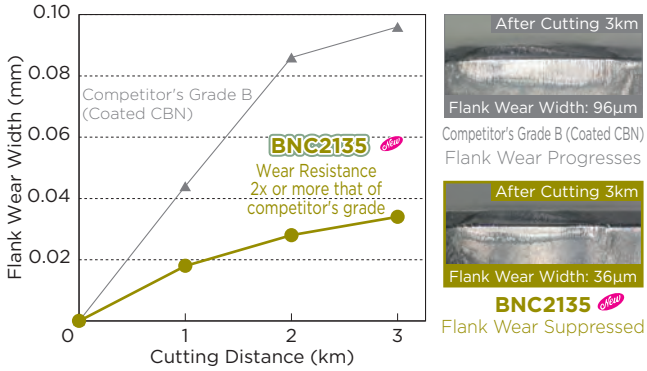
■ Cutting Performance

● BNC2135 Heavy Interrupted Cutting (Fracture Resistance)



Work Material	: SCM415H Heavy Interrupted Grooved Facing (58 to 62 HRC)
Tool Cat. No.	: 4NC-CNGA120408
Cutting Conditions	: vc = 120m/min f = 0.1mm/rev ap = 0.2mm Wet

● BNC2135 Continuous Cutting (Wear Resistance)

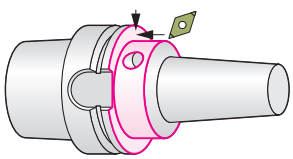


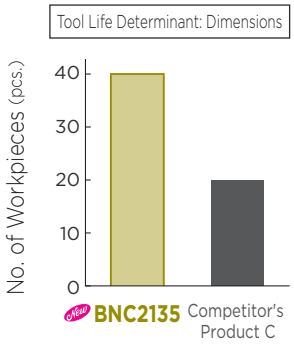
Work Material	: SCM415H (58 to 62 HRC)
Tool Cat. No.	: 4NC-CNGA120408
Cutting Conditions	: vc = 120m/min f = 0.1mm/rev ap = 0.2mm Wet

■ Application Examples

SCM420H Hardened Steel Hydro Chuck (58HRC) BNC2135 H

BNC2135 has better fracture resistance than competitor's coated CBN, achieving longer tool life

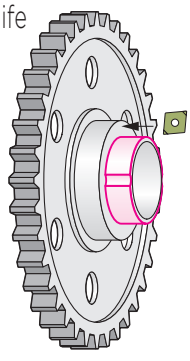


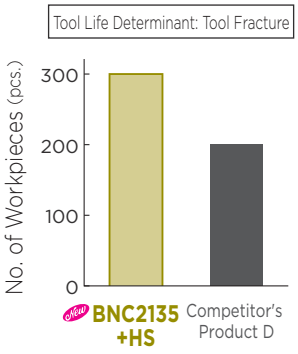


Tool: 4NC-DNGA150404 (BNC2135)
Cutting Conditions: vc = 100m/min f = 0.1mm/rev ap = 0.05mm Wet

SCr420H Hardened Steel Gear (60HRC) BNC2135 H

BNC2135 with strong HS type cutting edge treatment suppresses fractures in heavy interrupted cutting, improving tool life





Tool: 4NC-CNGA120404HS (BNC2135)
Cutting Conditions: vc = 100m/min f = 0.2mm/rev ap = 0.1mm Dry

BNC2010/BNC2020 H

Excellent machining stability

■ Features

The BNC2000 series achieves stable tool life in low-rigidity machining such as small-diameter parts machining and carburised layer removal

VIDEO OF CUTTING

BNC2010 / BNC2020

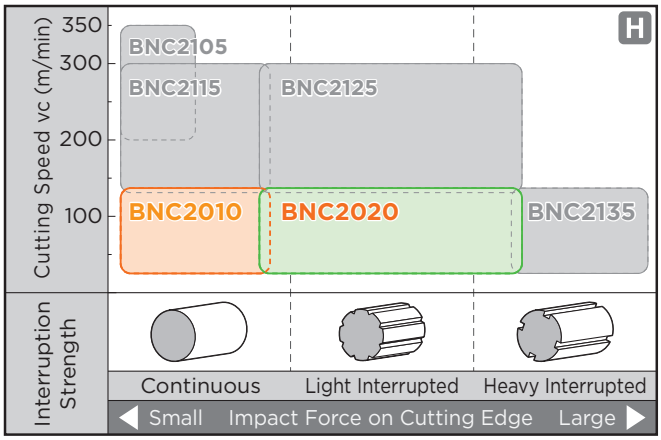
■ Lineup

● **BNC2010** · **High-precision grade for low- to medium-speed machining**
Excellent wear resistant CBN substrate and coating layer, for high-precision machining that requires surface roughness and surface finish accuracy

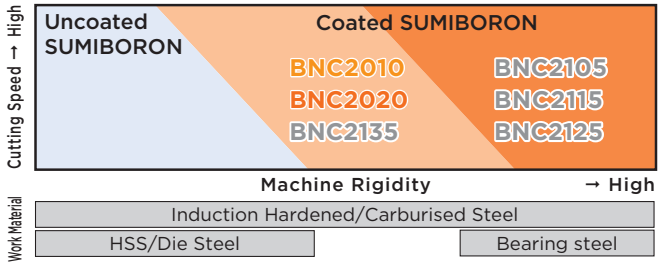
● **BNC2020** · **General-purpose grade for low- to medium-speed machining**
Utilizing an especially high wear resistant coating and a tough CBN substrate. Excellent machining stability in low-rigidity environments and high-load cutting. Also recommended for carburised layer removal

■ Application Range

● Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



■ Differentiation



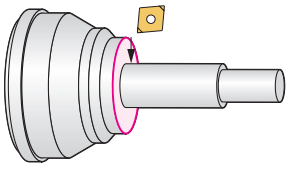
■ Recommended Cutting Conditions

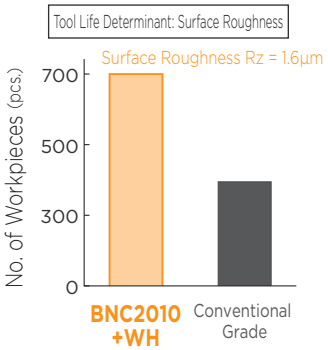
Grade	Cutting Speed vc (m/min) Min.-**Optimum**-Max.	Feed Rate f (mm/rev) Min.-**Optimum**-Max.	Depth of Cut ap (mm) Min.-**Optimum**-Max.
BNC2010	50 - **140** - 180	0.03 - **0.10** - 0.20	0.03 - **0.20** - 0.35
BNC2020	50 - **120** - 180	0.03 - **0.20** - 0.40	0.05 - **0.30** - 0.50

■ Application Examples

S45C Hardened Steel CVJ Outer Race (60HRC) BNC2010 H

BNC2010 WH type wiper insert maintains excellent surface roughness for a long time

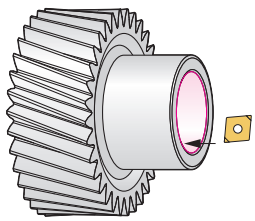


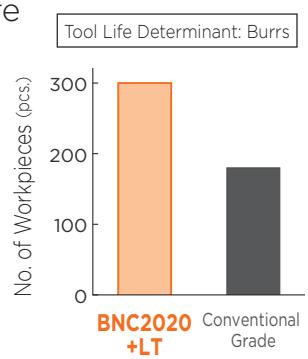


Tool: 2NC-CNGA120412WH (BNC2010)
Cutting Conditions: vc = 150m/min f = 0.2mm/rev ap = 0.2mm
Dry

SCr420H Hardened Steel Gear (60HRC) BNC2020 H

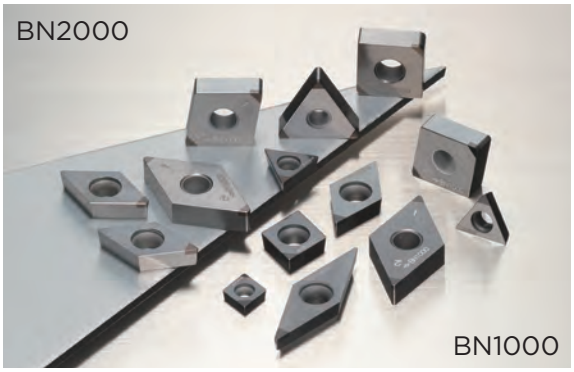
BNC2020 with high-precision LT type cutting edge treatment suppresses burrs and improves tool life





Tool: 2NC-CNGA120408LT (BNC2020)
Cutting Conditions: vc = 100m/min f = 0.10mm/rev ap = 0.15mm
Dry

BN1000/BN2000 H Hardened Steel



■ Features

**Uncoated SUMIBORON grades that utilize a newly developed high-purity ceramic binder.
Combines both fracture and wear resistance to achieve a stable tool life in a wide variety of hardened steel machining.
A wide selection of inserts are available, starting from a single-cornered type.**

■ Lineup

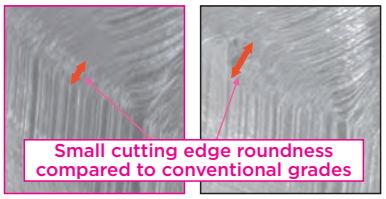
● BN1000

- **SUMIBORON grade for high-speed machining with the best wear resistance**
  Providing superior tool life in continuous cutting to light interrupted cutting.
- **Improved fracture resistance while emphasizing wear resistance.**
  Improved hardness and thermal resistance from the high-purity TiCN ceramic binder.

● BN2000

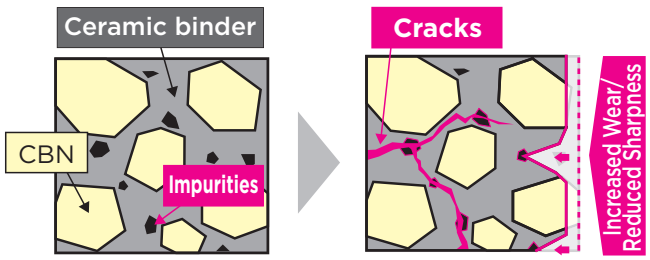
- **General-purpose grade suitable for typical hardened steel machining applications.**
  Provides stable tool life in continuous to light to medium interrupted machining.
- **Has a high degree of both fracture and wear resistance.**
  Significant improvements in the performance of both by employing a high-purity ceramic binder.
- **Stable surface roughness achieved by increasing edge sharpness (right figure).**

Sharpness Comparison



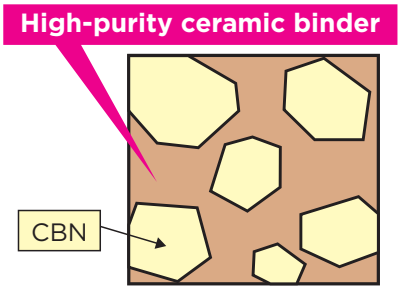
■ Newly Developed High-purity Ceramic Binder

Conventional Grade



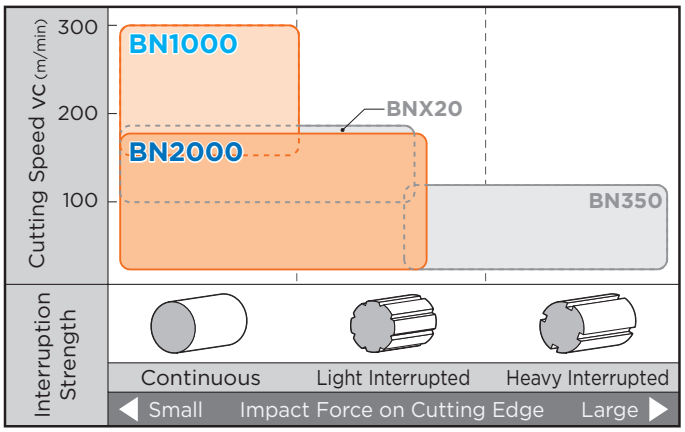
The impurities contained in the ceramic binder for conventional grades decrease the sintered body strength and thermal resistance, leading to cracks (fracture) and wear.

BN1000/BN2000



With a newly developed high-purity ceramic binder, BN1000/BN2000 achieve toughness and improved thermal resistance by decreasing impurities to an extreme.

■ Application Range



■ Recommended Cutting Conditions

● BN1000

Cutting Speed vc (m/min)	
30 100 120 150 200 250 300	
Feed Rate f (mm/rev)	Depth of Cut ap (mm)
0.03 to 0.15	0.03 to 0.2

● BN2000

Cutting Speed vc (m/min)	
30 80 100 120 150 200 250 300	
Feed Rate f (mm/rev)	Depth of Cut ap (mm)
0.03 to 0.2	0.03 to 0.3

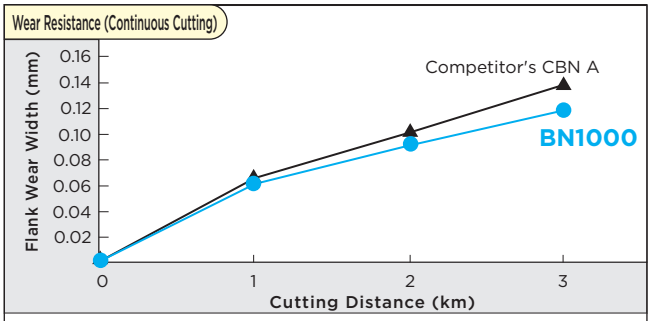
Cutting Oil: Continuous Cutting Dry, Wet
Interrupted Cutting Dry

BN1000/BN2000

H Hardened Steel

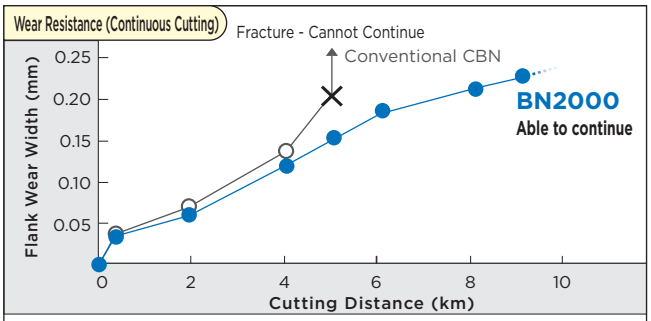
■ Cutting Performance

● BN1000



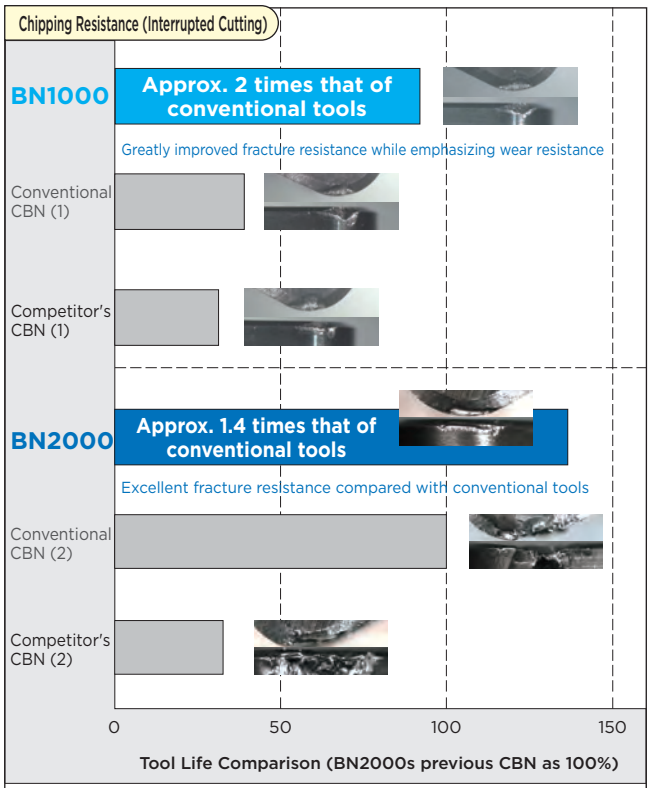
Work Material : SUJ2 (58 to 62HRC)
Tool Cat. No. : 2NU-CNGA120408
Cutting Conditions : vc = 150m/min, f = 0.1mm/rev, ap = 0.2mm, Dry

● BN2000



Work Material : SCM415H (58 to 62HRC)
Tool Cat. No. : 2NU-CNGA120408
Cutting Conditions : vc = 100m/min, f = 0.1mm/rev, ap = 0.2mm, Dry

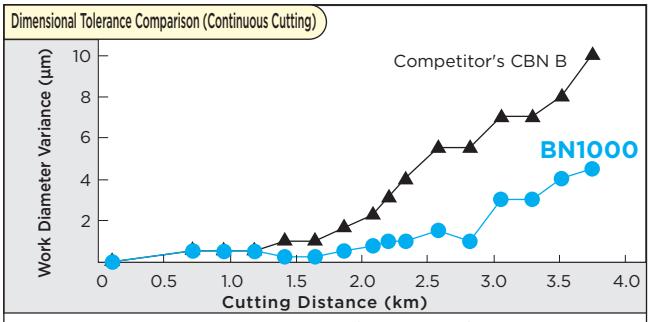
● BN1000/BN2000



Work Material : SCM415H with 8 grooves (58 to 62HRC)
Tool Cat. No. : 2NU-CNGA120408
Cutting Conditions : vc = 150m/min, f = 0.1mm/rev, ap = 0.2mm, Dry

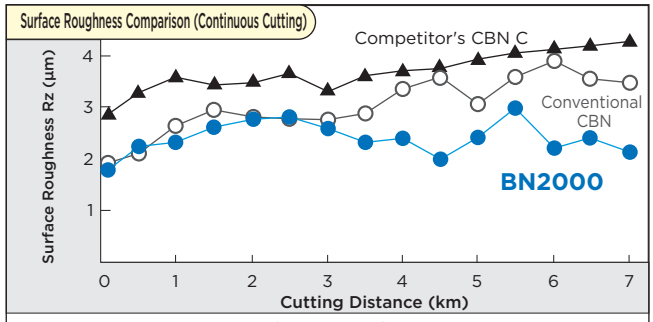
■ Machining Precision

● BN1000



Work Material : SCM415H ø130 O.D. (58 to 62 HRC)
Tool Cat. No. : 2NU-CNGA120408
Cutting Conditions : vc = 200m/min, f = 0.1mm/rev, ap = 0.1mm Wet

● BN2000



Work Material : SCM415H (58 to 62HRC)
Tool Cat. No. : 2NU-CNGA120408
Cutting Conditions : vc = 100m/min, f = 0.08mm/rev, ap = 0.2mm, Dry

BN7125 (K Cast Iron, Sintered Alloy) /BN7115 (Sintered Alloy)

VIDEO OF CUTTING
BN7115

■ Features

Improved wear resistance through high CBN content. Further, with improved CBN particle/binder boundary strength due to the special binder and improved binding strength between CBN particles thanks to our proprietary sintering process, excellent fracture resistance is achieved.
Provides stable performance for high-speed finishing of cast iron, sintered alloy and exotic alloys.

■ Lineup

● BN7125

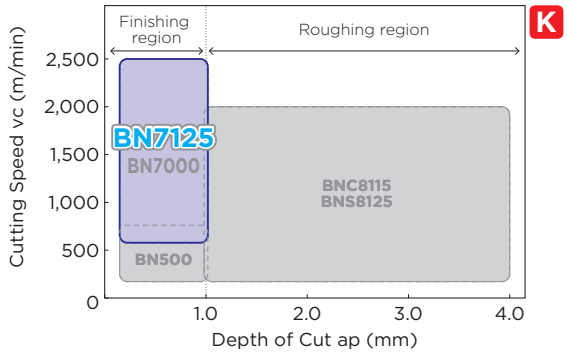
General-purpose Grade for Cast Iron/Sintered Alloy Machining
Achieves high-efficiency machining of sintered alloy with a standard + 3 types of cutting edge variations
Exhibits good thermal crack resistance in high-speed finishing of cast iron.
Also suitable for machining difficult-to-cut materials such as rolls, HSS, and heat-resistant alloys.

● BN7115

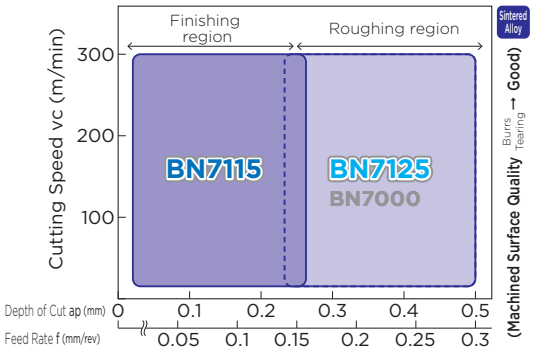
Edge sharpness in sintered alloy machining is excellent, suppressing burrs and tearing

■ Application Range

● Cast Iron



● Sintered Alloy



■ Recommended Cutting Conditions

● Cast Iron

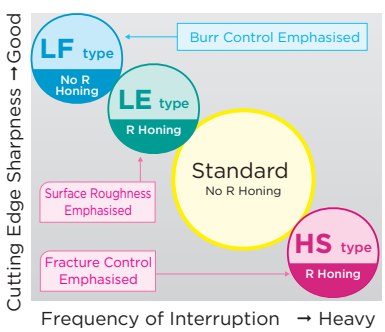
Work Material	Grade	Recommended Cutting Conditions Min. - **Optimum** - Max.		
		Cutting Speed vc (m/min)	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Cast Iron	BN7125	100-**1,000**-2,500	0.05-**0.30**-0.60	0.05-**0.50**-1.00

● Sintered Alloy

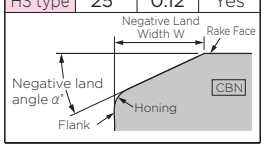
Work Material	Grade	Recommended Cutting Conditions Min. - **Optimum** - Max.		
		Cutting Speed vc (m/min)	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
General Sintered Alloy	BN7115	10-**150**-300	0.01-**0.08**-0.15	0.05-**0.13**-0.25
	BN7125	10-**150**-300	0.01-**0.15**-0.30	0.05-**0.25**-0.50
High-density Sintered Alloy	BN7115	10-**100**-200	0.01-**0.06**-0.12	0.05-**0.10**-0.20
	BN7125	10-**100**-200	0.01-**0.15**-0.30	0.05-**0.25**-0.50

■ Recommended Cutting Edge Treatment

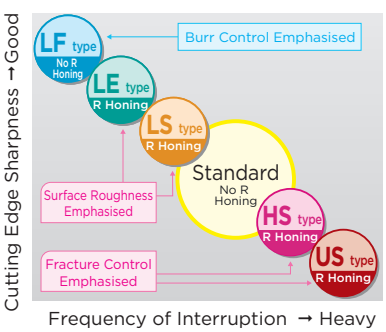
BN7125



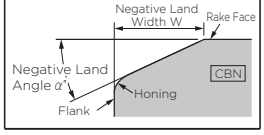
Type	α°	W (mm)	Honing
Standard	15°	0.12	No
LF type	Sharp Edge		No
LE type	Sharp Edge		Yes
HS type	25°	0.12	Yes



BN7115



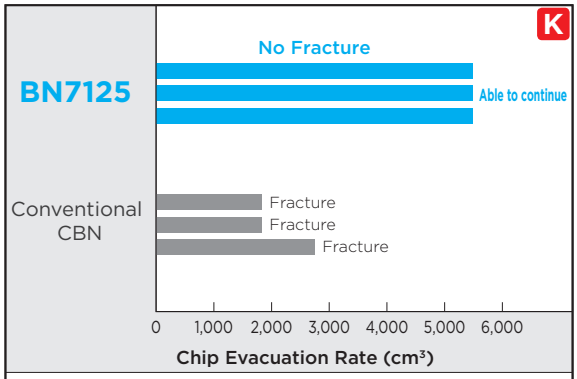
Type	α°	W (mm)	Honing
Standard	15°	0.12	No
LF type	Sharp Edge		No
LE type	Sharp Edge		Yes
LS type	15°	0.07	Yes
HS type	25°	0.05	Yes
US type	25°	0.12	Yes



BN7125 K Cast Iron Sintered Alloy /BN7115 Sintered Alloy

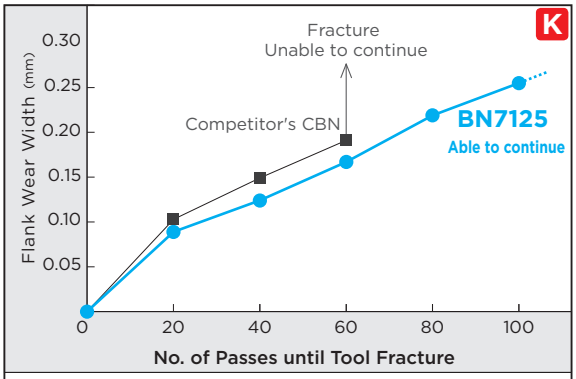
■ Cutting Performance (Cast Iron)

● BN7125 Milling (Fracture Resistance)



Work Material : FC250 (Pearlite)
Tool Cat. No. : FMU4080R Insert: SNEW1203ADTR
Cutting Conditions : vc = 1,500m/min, fz = 0.13mm/t, ap = 0.3mm, Remainder Wet

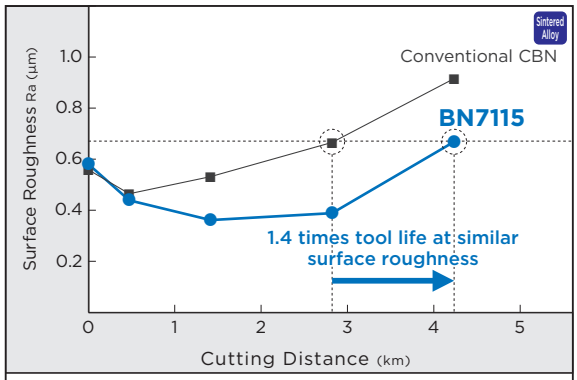
● BN7125 Interrupted Cutting (Fracture Resistance)



Work Material : FC250 with 6 grooves
Tool Cat. No. : 2NU-CNGA120408
Cutting Conditions : vc = 750m/min, f = 0.15mm/rev, ap = 0.2mm Wet

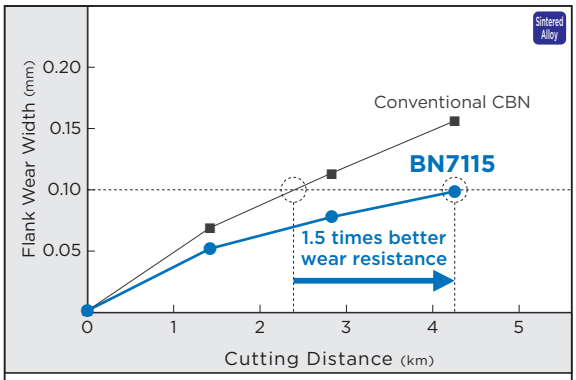
■ Cutting Performance (Sintered Alloy)

● BN7115 Continuous Cutting (Surface Roughness)

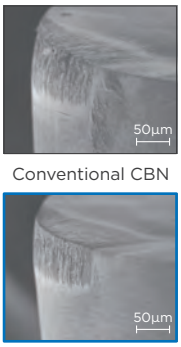


Work Material : Sintered Alloy F-08C2 equivalent (150HV)
Tool Cat. No. : 2NU-CNGA120408
Cutting Conditions : vc = 200m/min, f = 0.1mm/rev, ap =0.2mm Wet

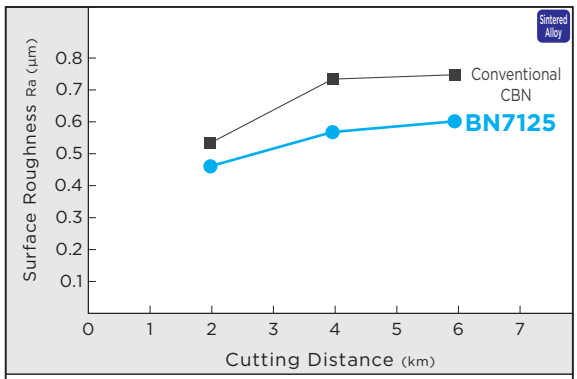
● BN7115 Continuous Cutting (Wear Resistance)



Work Material : Sintered Alloy F-08C2 equivalent (150HV)
Tool Cat. No. : 2NU-CNGA120408
Cutting Conditions : vc = 200m/min, f = 0.1mm/rev, ap =0.2mm Wet

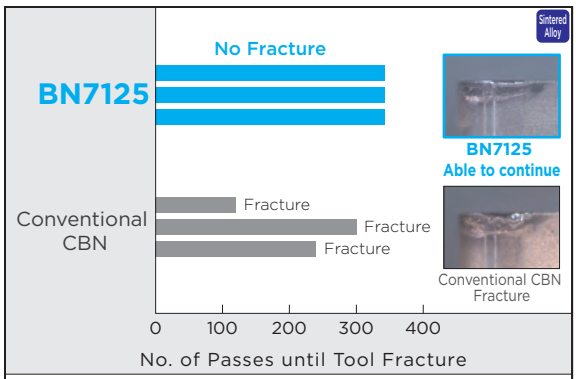


● BN7125 Continuous Cutting (Surface Roughness)



Work Material : Sintered Alloy F-08C2 equivalent (150HV)
Tool Cat. No. : 2NU-CNGA120408
Cutting Conditions : vc = 200m/min, f = 0.1mm/rev, ap = 0.2mm Wet

● BN7125 Interrupted Cutting (Fracture Resistance)



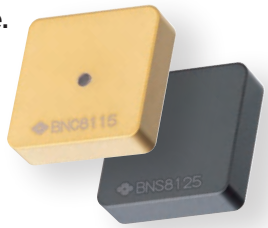
Work Material : Hardened Sintered Alloy FLA-07C2M equivalent (500HV)
Tool Cat. No. : 3NU-TNGA160404LE
Cutting Conditions : vc = 250m/min, f = 0.08mm/rev, ap = 0.5mm Wet

BNC8115/BNS8125 K Cast Iron H Hardened Steel

VIDEO OF CUTTING

■ Features

Covers a wide range of machining applications from roughing to finishing of cast iron, hard-to-cut cast iron, and hardened steel.
100% solid CBN structure enables depth-of-cut of 0.5mm and above.



■ Lineup

● BNC8115

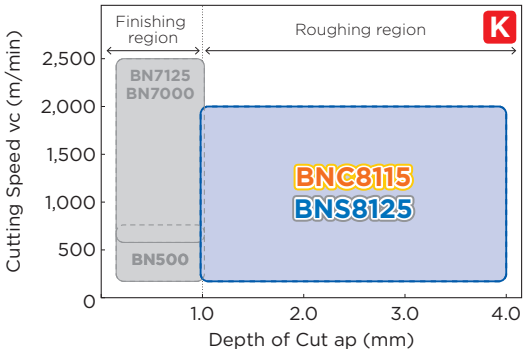
PVD coating with excellent wear resistance suppresses flank wear when machining difficult-to-cut cast iron and hardened steel.
Ideal for roughing and depth-of-cut of 0.5 to 3.0mm. Can also be used for roughing and finishing of grey cast iron. Gold coating improves visibility of used corners.

● BNS8125

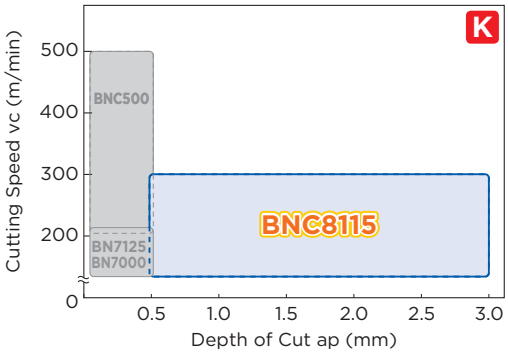
Optimising the particle size distribution of the CBN particles has resulted in improved fracture resistance and longer life while maintaining wear resistance during gray cast iron machining.

■ Application Range

● Grey Cast Iron

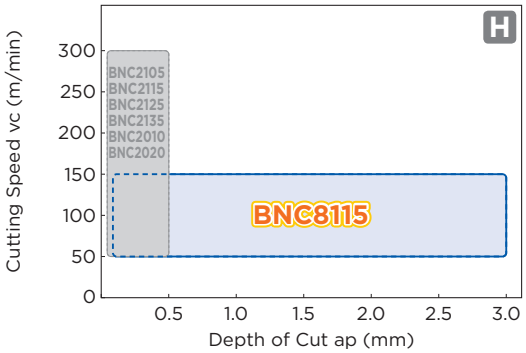


● Ductile Cast Iron



Wet machining is recommended for grey cast iron
For dry machining, BNC8115/BNS8125 are recommended for both roughing and finishing

● Hardened Steel



■ Recommended Cutting Conditions

● Cast Iron (Turning) K

Work Material	Grade	Recommended Cutting Conditions Min. - **Optimum** - Max.		
		Cutting Speed vc (m/min)	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Grey Cast Iron	BNC8115	200-**1,000**-2,000	0.10-**0.50**-1.00	≤ 4.0
	BNS8125	200-**1,000**-2,000	0.10-**0.50**-1.00	≤ 4.0
Ductile Cast Iron	BNC8115	80 - **160** - 300	0.10-**0.30**-0.50	≤ 3.0
	BNS8125	80 - **120** - 200	0.10-**0.30**-0.50	≤ 3.0

● Hardened Steel (Turning) H

Work Material	Grade	Recommended Cutting Conditions Min. - **Optimum** - Max.		
		Cutting Speed vc (m/min)	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Hardened Steel	BNC8115	50-**100**-150	0.10-**0.25**-0.40	≤ 3.0

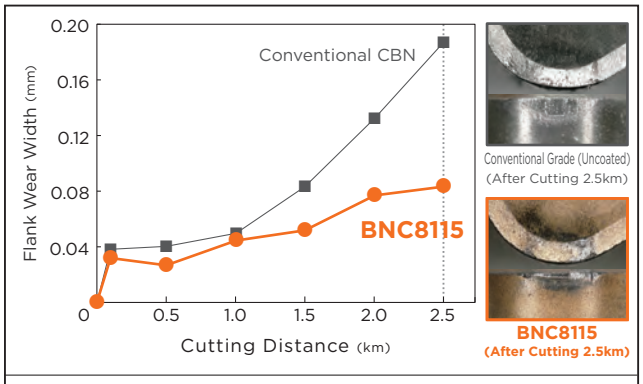
● Cast Iron (Milling) K

Work Material	Grade	Recommended Cutting Conditions Min. - **Optimum** - Max.		
		Cutting Speed vc (m/min)	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Grey Cast Iron	BNC8115	800-**1,400**-2,000	0.10-**0.50**-1.00	≤ 4.0
	BNS8125	800-**1,400**-2,000	0.10-**0.50**-1.00	≤ 4.0

BNC8115/BNS8125 K Cast Iron H Hardened Steel

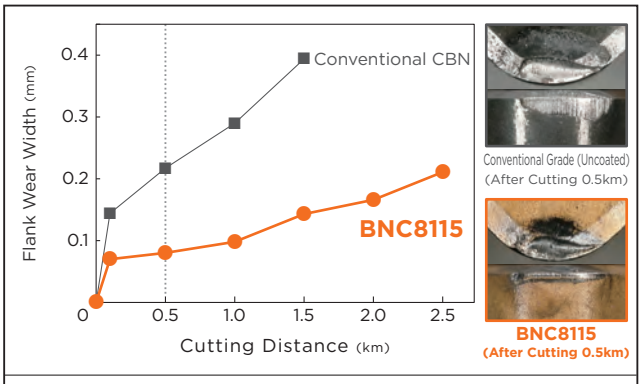
■ Cutting Performance (BNC8115)

● Wear Resistance (Ductile Cast Iron Machining) K



Work Material : FCD450
Tool Cat. No. : SNGN090308
Cutting Conditions: vc = 300m/min, f = 0.2mm/rev, ap = 0.2mm Wet

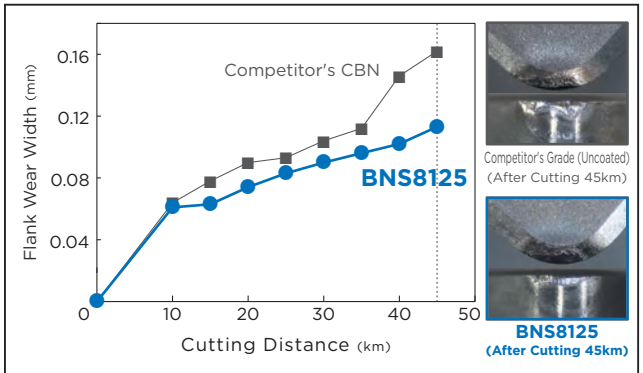
● Wear Resistance (Hardened Steel Machining) H



Work Material : SUJ2 (58 to 62 HRC)
Tool Cat. No. : SNGN090308
Cutting Conditions: vc = 150m/min, f = 0.2mm/rev, ap = 0.3mm Wet

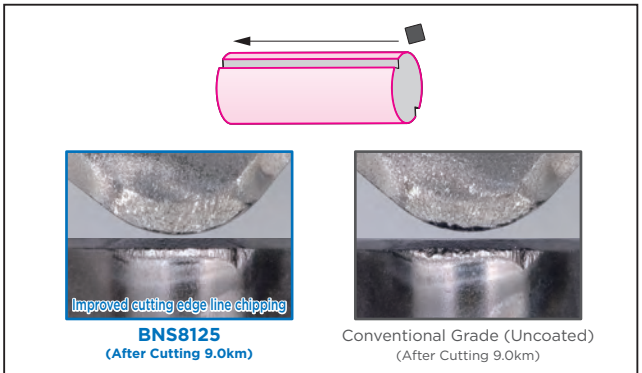
■ Cutting Performance (BNS8125)

● Wear Resistance (Grey Cast Iron Machining) K



Work Material : FC300
Tool Cat. No. : SNGN090308
Cutting Conditions: vc = 800m/min, f = 0.1mm/rev, ap = 0.2mm Wet

● Fracture Resistance (Ductile Cast Iron Machining) K



Work Material : FCD450 with 2 V-grooves
Tool Cat. No. : SNGN120408
Cutting Conditions: vc = 200m/min, f = 0.2mm/rev, ap = 0.5mm Wet

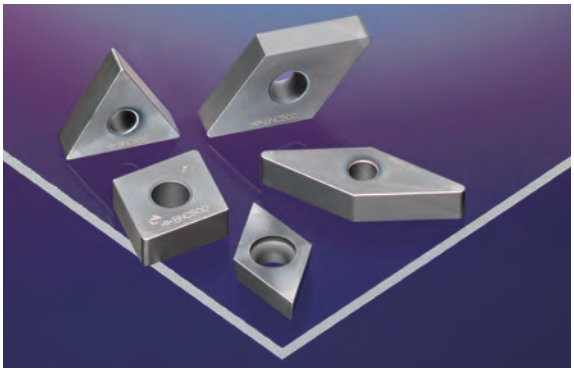
■ Choosing Between BNC8115 and BNS8125 (Cast Iron/Hardened Steel)

Work Material		Coated SUMIBORON BNC8115 Turning		Coated SUMIBORON BNC8115 Milling		SUMIBORON BNS8125 Turning		SUMIBORON BNS8125 Milling		SUMIBORON BN7125 Turning		SUMIBORON BN7125 Milling		Coated SUMIBORON BNC500 Turning		Coated SUMIBORON BNC2125 Turning	
K	Grey Cast Iron	○	Best			○	Best Economical			○	Depth of Cut 1.0mm or below High-speed Finishing			—	—	—	—
K	Ductile Cast Iron	○	Depth of Cut 0.5mm or above			○	Interrupted Machining			○	Depth of Cut 0.5mm or below Low-speed Machining			○	Depth of Cut 0.5mm or below	—	—
H	Hardened Steel	○	Depth of Cut 0.5mm or above			—	—			—	—			—	—	○	Depth of Cut 0.5mm or below High-speed Machining

○: Recommendation

BNC500 K Cast Iron

Coated CBN Grade for Ductile Cast Iron Machining



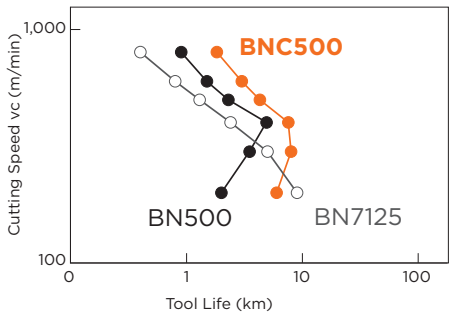
■ Features

Significant improvements in the toughness and wear resistance of the CBN substrate through the use of a newly developed high-purity TiC binder. In addition, the combination with a ceramic coating with excellent thermal resistance provides outstanding wear resistance. High-speed, high-precision machining is achieved when finishing ductile cast iron. Furthermore, long and stable tool life is realised in machining high-strength ductile cast iron, special cast irons such as vermicular cast iron and centrifugally-cast cast iron.

- **Achieves stable tool life for high-speed machining of ductile cast iron**
  Superior wear resistance, making stable machining possible under high-speed conditions.
- **Supports high-precision machining**
  Can maintain excellent dimensional tolerance and surface roughness over many hours.

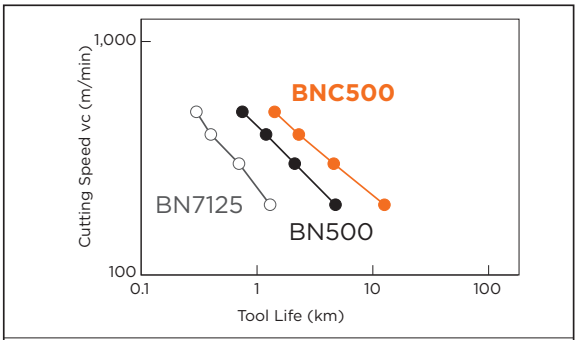
■ Cutting Performance

● FCD450 Continuous Cutting (V-T Chart)



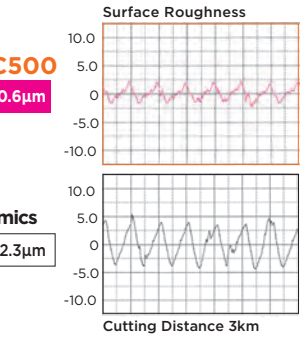
Work Material : FCD450 (160HB) Tool Cat. No.: 4NC-CNGA120408
Cutting Conditions : f = 0.2mm/rev, ap = 0.2mm Wet
Tool Life Criterion : $V_B$max. = 0.2mm

● FCD700 Continuous Cutting (V-T Chart)



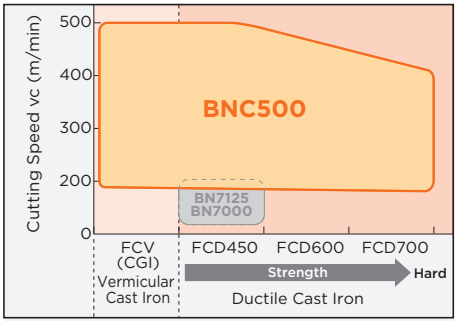
Work Material : FCD700 (260HB) Tool Cat. No.: 4NC-CNGA120408
Cutting Conditions : f = 0.2mm/rev, ap = 0.2mm Wet
Tool Life Criterion : $V_B$max. = 0.2mm

■ Machined Surface Quality

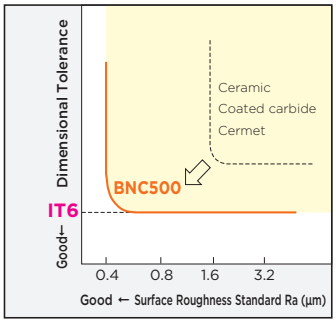


Work Material : FCD700 (260HB)
Cutting Conditions : VC = 400m/min, f = 0.1mm/rev
ap=0.1mm Wet

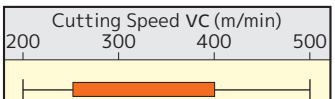
■ Application Range



■ High-precision Machining



■ Recommended Cutting Conditions

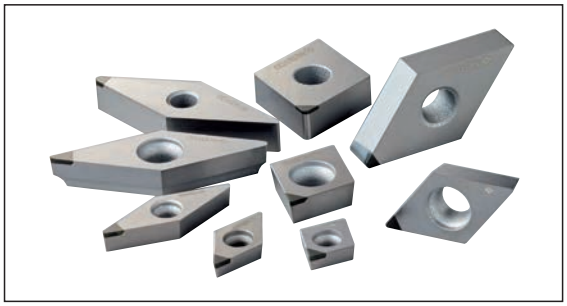


Feed Rate f (mm/rev)	Depth of Cut ap (mm)
0.10 to 0.40	≤ 0.50

Cutting Oil: Wet

MEMO

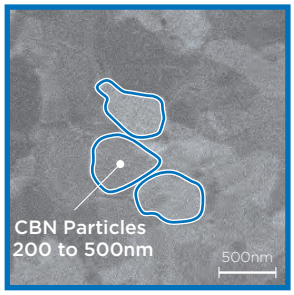
Nano-polycrystalline CBN



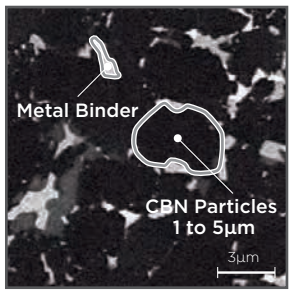
■ Features

SUMIBORON BINDERLESS, which does not contain any binders, is a sintered CBN with directly and strongly bonded nano- to sub-micron CBN particles.
With higher hardness and thermal conductivity than conventional CBN grades, higher efficiency and longer tool life can be realised in machining hard-to-cut materials such as titanium alloys and cobalt-chrome alloys.

■ Sintered Structure (SEM Image)



SUMIBORON BINDERLESS



Conventional CBN

■ Physical Values

	SUMIBORON BINDERLESS	Conventional CBN
CBN Content (vol%)	100	90 to 95
Binder	—	WC-Co
Hardness Hv (GPa)	51 to 54	41 to 44
Thermal Conductivity (W/m·K)	180 to 200	100 to 120

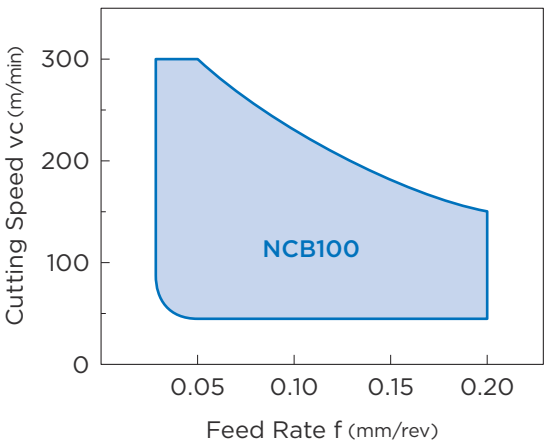
SUMIBORON BINDERLESS NCB100

■ Features

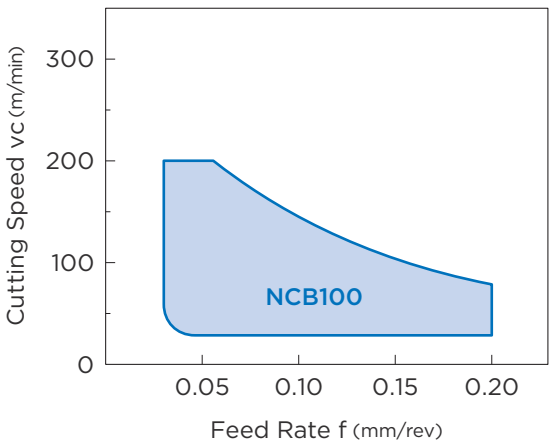
Adopts a nano-polycrystalline CBN sintered structure with hardness and thermal conductivity significantly higher than conventional sintered CBN. Enables overwhelmingly longer tool life, improved efficiency and machining accuracy when machining hard-to-cut materials such as titanium alloys or cobalt-chrome alloys

- **Ideal for high-efficiency finishing of hard-to-cut materials such as titanium alloys and cobalt-chrome alloys**
  Exhibits outstanding wear resistance due to the excellent hardness and thermal conductivity of nano-polycrystalline CBN
- **Excellent dimensional tolerance and machined surface roughness maintained for extended periods**
  Number of tool changes can be drastically reduced compared to conventional grades, enabling work efficiency to be improved and total costs to be reduced

■ Application Range (Titanium Alloy Machining)



■ Application Range (Cobalt-chrome Alloy Machining)

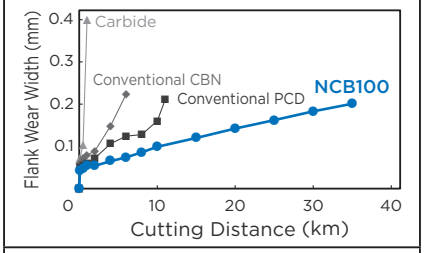


NCB100

K Cast Iron | S Exotic Alloy | Cemented Carbide | Hard Brittle Materials

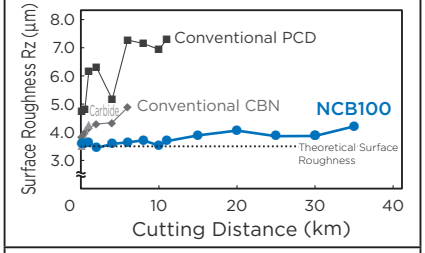
■ Cutting Performance (Titanium Alloy Machining)

● Wear Resistance

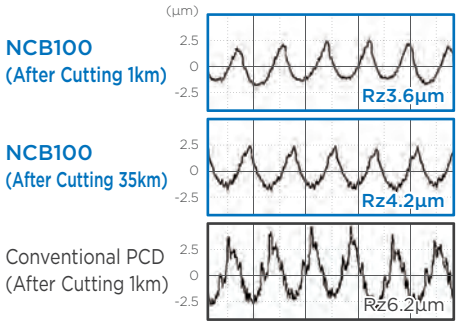


Work Material : Titanium Alloy (Ti-6Al-4V)
Tool Cat. No. : NU-CNGA120408
Cutting Conditions : vc = 150m/min, f = 0.15mm/rev,
ap = 0.5mm Wet (High Pressure Coolant)

● Machined Surface Roughness

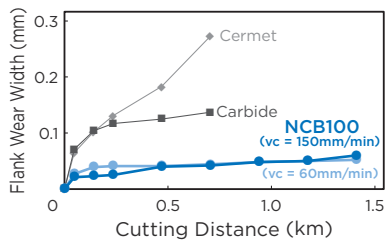


Work Material : Titanium Alloy (Ti-6Al-4V)
Tool Cat. No. : NU-CNGA120408
Cutting Conditions : vc = 150m/min, f = 0.15mm/rev,
ap = 0.5mm Wet (High Pressure Coolant)



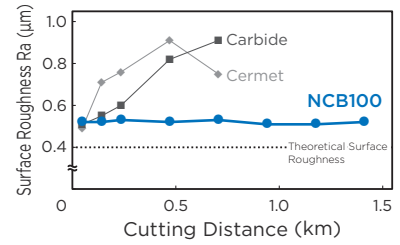
■ Cutting Performance (Cobalt-chrome Alloy Machining)

● Wear Resistance

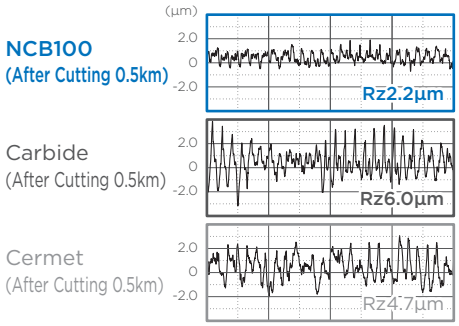


Work Material : Cobalt-chrome Alloy (Forging)
Tool Cat. No. : NU-VNGA160408
Cutting Conditions : vc = 60,150m/min, f = 0.1mm/rev,
ap = 0.4mm Wet

● Machined Surface Roughness



Work Material : Cobalt-chrome Alloy (Forging)
Tool Cat. No. : NU-VNGA160408
Cutting Conditions : vc = 60m/min, f = 0.1mm/rev,
ap = 0.4mm Wet



■ Recommended Cutting Conditions

● Titanium Alloy

Work Material		Grade	Recommended Cutting Conditions (Min. - Optimum - Max.)		
Composition	Hardness (HRC)		Cutting Speed vc (m/min) 50 100 150 200 250 300	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Ti-6Al-4V	30 - 35	NCB100		0.05 - **0.15** - 0.20	0.10 - **0.30** - 0.50
Ti-5Al-5V-5Mo-3Cr	32 - 38	NCB100		0.05 - **0.10** - 0.20	0.10 - **0.30** - 0.50
Ti-10V-2Fe-3Al	32 - 38	NCB100		0.05 - **0.10** - 0.20	0.10 - **0.30** - 0.50

● Cobalt-chrome Alloy

Work Material		Grade	Recommended Cutting Conditions (Min. - Optimum - Max.)		
Composition	Hardness (HRC)		Cutting Speed vc (m/min) 50 100 150 200	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Co-30Cr-5Mo	35 - 45	NCB100		0.05 - **0.15** - 0.20	0.10 - **0.15** - 0.30

● Cemented Carbide

Work Material		Grade	Recommended Cutting Conditions (Min. - Optimum - Max.)		
Composition	Hardness (HRA)		Cutting Speed vc (m/min) 5 10 15 20 25 30 35 40	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
WC-20Co	Less than 85	NCB100		0.03 - **0.10** - 0.20	0.03 - **0.10** - 0.20

*SUMIDIA BINDERLESS NPD10 is recommended for cemented carbide machining of 83HRA or more.

● Others

Work Material		Grade	Recommended Cutting Conditions (Min. - Optimum - Max.)		
Composition/Material	Hardness (HV)		Cutting Speed vc (m/min) 10 50 100 200 300 400	Feed Rate f (mm/rev)	Depth of Cut ap (mm)
Pure Titanium	130 - 230	NCB100		0.05 - **0.10** - 0.20	0.10 - **0.30** - 0.50
Cermet Material (Binder with Ferrous Metals)	1,000 - 1,500	NCB100		0.05 - **0.10** - 0.20	0.10 - **0.20** - 0.30

Insert Identification Code

Regrindable type

Example **C N M A**

(1) **(1) Insert Shape** — Refer to Table 1
(2) **(2) Relief Angle** — Refer to Table 2
(3) **(3) Tolerance** — Refer to Table 3
(4) **(4) Insert Hole** — Refer to Table 4

One-use type (Disposable)

Example **2 NU - C N G A**

(9) **(9) No. of Cutting Edges** — Refer to Table 9
(10) **(10) Type Code** — Refer to Table 10
(1) **(1) Insert Shape** — Refer to Table 1
(2) **(2) Relief Angle** — Refer to Table 2
(3) **(3) Tolerance** — Refer to Table 3
(4) **(4) Insert Hole** — Refer to Table 4

Table 1: (1) Insert Shape

Symbol	Insert Shape		Apex Angle
C		Diamond type	80°
D			55°
V			35°
R		Round type	—
S		Square type	90°
T		Triangular type	60°
W		Trigon type	80°

Table 2: (2) Relief Angle

Symbol	Relief Angle
B	5°
C	7°
N	0°
P	11°

Table 3: (3) Tolerance

Symbol	Tolerance of Corner Height (mm)	Inscribed Circle (mm)	Thickness (mm)
E	± 0.025	± 0.025	± 0.025
G	± 0.025	± 0.025	± 0.13
M*	±0.08 to ±0.2	±0.05 to ±0.15	± 0.13

★ Generally, these inserts have unground side faces
Refer to page B2 for details on M Class precision

Table 4: (4) Insert Hole

Symbol	Insert Hole	Hole Style	Chipbreaker	Shape (Cross Section)	Symbol	Insert Hole	Hole Style	Chipbreaker	Shape (Cross Section)
N	No	No	No		A	Yes	Straight hole	No	
W	Yes	Straight hole + Single chamfer (40° to 60°)	No		M			One Face	
T			One Face		G			Double-sided	
					X	–	–	–	Special

Table 9: (9) No. of Cutting Edges

Symbol	No. of Cutting Edges	Type
No	1	1-Cornered type
2	2	Multi-Cornered type
3	3	
4	4	
6	6	

Table 10: (10) Type Code (One-use type)

Symbol	Type	Grade
NC	Coated SUMIBORON	BNC2115,BNC2125,BNC2135,BNC2010, BNC2020,BNC200,BNC300,BNC500
NU	Uncoated SUMIBORON	BNX10,BNX20,BN1000,BN2000,BN350, BN500,BN7000,BN7115,BN7500
	SUMIBORON BINDERLESS	NCB100

*Cat. numbers that begin with a "T-" are 10-piece packs

Codes (1), (2), (3), and (4) show typical examples.

Insert Identification Code

12 04 08 (-)B

(5) (6) (7) (8)

- (5) Cutting Edge Length — Refer to Table 5
- (6) Thickness — Refer to Table 6
- (7) Corner Radius — Refer to Table 7
- (8) Additional Information — Refer to Table 8

12 04 08 LT

(5) (6) (7) (8)

- (5) Cutting Edge Length — Refer to Table 5
- (6) Thickness — Refer to Table 6
- (7) Corner Radius — Refer to Table 7
- (8) Additional Information — Refer to Table 8

Table 5: (5) Cutting Edge Length (Side Length) (Typical Examples) Note: Cutting edge length indicated is measured without corner radii. (mm)

Shape	Symbol	Cutting Edge Length (Side Length)	Inscribed Circle
C 80° Diamond type	04	4.37	4.30
	06	6.4	6.35
	08	8.0	7.94
	09	9.7	9.525
	12	12.9	12.70
D 55° Diamond type	07	7.7	6.35
	11	11.6	9.525
	15	15.5	12.70
R Round type	09	9.525	9.525
	12	12.70	12.70
S Square type	09	9.525	9.525
	12	12.70	12.70
T Triangular type	06	6.9	3.97
	08	8.2	4.76
	09	9.6	5.56
	11	11.0	6.35
	16	16.5	9.525
	22	22.0	12.70
V 35° Diamond type	08	8.3	4.76
	11	11.1	6.35
	16	16.6	9.525

Shape	Symbol	Cutting Edge Length (Side Length) Negative	Cutting Edge Length (Side Length) Positive	Inscribed Circle Negative	Inscribed Circle Positive
W Trigon type	06		3.2		3.97
	08	8.7	4.6	12.70	4.76

For the one-use type, cutting edge length indicates the side length of the CBN tip. See page L34 on for the one-use type cutting edge length.

Table 6: (6) Thickness

Symbol	Thickness (mm)
X1	*
01	1.59
02	2.38
03	3.18
T3	3.97
04	4.76
06	6.35

(*)
CC□T03X1 Insert Thickness: 1.40
CC□T04X1 Insert Thickness: 1.80

Table 7: (7) Corner Radius

Symbol	Corner Radius (mm)
00	Sharp Edged
01	0.1
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4

Table 8 (8) Additional Information L30

Symbol	Old symbol	Code Description Uncoated	Code Description Coated
No	No	Standard Cutting Edge	
(-)B	(-)B	Full-top CBN type	
-BSTN	-BSN	Full-top CBN type (emphasis on edge sharpness)	
LF	F	Sharp Edge type	
LE			
LT	S	Emphasis on Edge Sharpness	
LS	M	General-purpose type for Continuous Cutting	Emphasis on Edge Sharpness
ES	—	—	High-efficiency type
HT	T	Strong-edged type	
HS			
US	—	Strong-edged type	

Symbol	Code Description
WG	Wiper Insert type
WH	
W	
LFW	Wiper Sharp Edge type
N-FV	Chipbreaker type
N-LV	
N-SV	

Codes (5), (6) and (7) show typical examples.

FV type/LV type/SV type

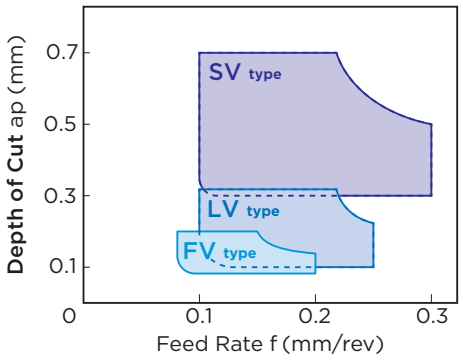
VIDEO OF CUTTING

FV type / LV type

■ Features

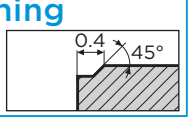
- One-use SUMIBORON insert with chipbreaker. SV type is ideal for carburised layer removal, while FV and LV types are ideal for hardened steel machining.
- Chipbreaker incorporated on the CBN cutting edge to maintain chip control capabilities throughout the machining process.
- Unique chipbreaker design can be applied to both hardened and non-hardened parts with effective chip control.

■ Application Range



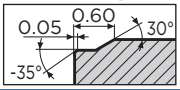
FV type For Finishing

Excellent chip evacuation under finishing conditions with depth of cut at 0.2mm or below



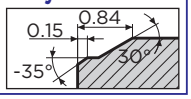
LV type For Light Cutting

Excellent chip evacuation with depth of cut at 0.3mm or below



SV type For Carburised Layer Removal

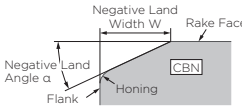
Ideal for carburised layer removal
Eliminates choked stoppages and dimensional defects



■ FV type / LV type / SV type Cutting Edge Specifications

Type	Series	Notation	Cutting Edge Specification Identification Code	α	W	Honing
With Chipbreaker	FV type	N-FV	—	0°	0	Yes
	LV type	N-LV	S00535	35°	0.05	Yes
	SV type	N-SV	S01235	35°	0.12	Yes

Cutting edge specification identification code



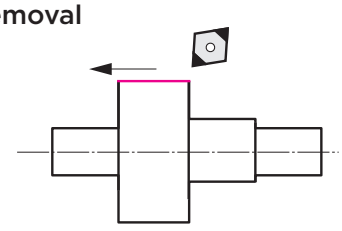
S 0 0 5 3 5

- Negative Land Width
- Negative Land Angle
- Cutting Edge Shape T: Negative Land S: Negative Land + Honing

Example: S00535
→ 35°/0.05mm Negative Land with Honing

■ Application Examples

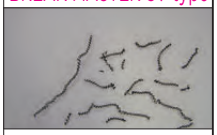
External Carburised Layer Removal



· No constant stoppages or incorrect part dimension problems and the chips are small.
· Double the tool life of competitors' CBN.

Work Material : SCr420 Carburised Steel (Shaft)
Tool Cat. No. : 4NC-CNGG120408N-SV (BNC200)
Cutting Conditions : vc = 150m/min, f = 0.15mm/rev
ap = 0.5mm, 2 Passes Wet

BREAK MASTER SV type



Tool Life = 200 pcs.

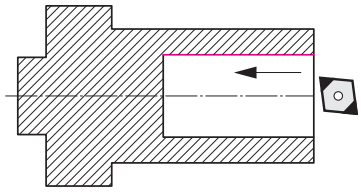
BNC200 (No Chipbreaker)

Tool Life = 200 pcs.

Competitor CBN (with chipbreaker)

Tool Life = 100 pcs.

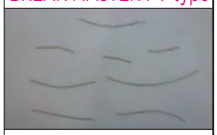
Finishing of Hardened Steel



· Improved chip control for internal boring

Work Material : Carburised Steel (60HRC Automotive Component)
Tool Cat. No. : 2NC-CCGT060204N-FV (BNC200)
Cutting Conditions : vc = 80m/min, f = 0.08mm/rev
ap = 0.15mm Wet

BREAK MASTER FV type

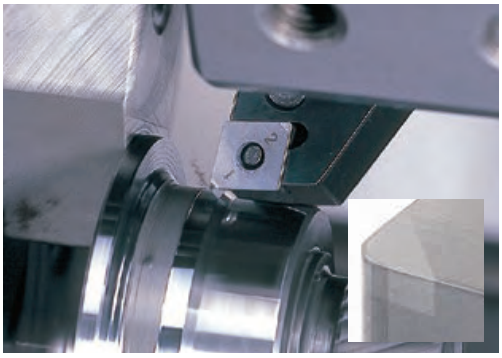


Tool Life = 300 pcs.

BNC200 (No Chipbreaker)

Tool Life = 300 pcs.

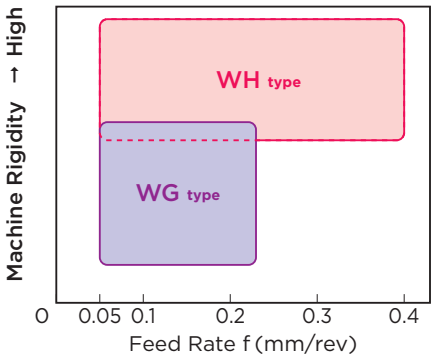
WG/WH type



■ Features

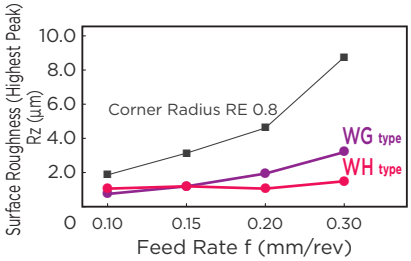
- SUMIBORON one-use insert with wiper flat for hardened steel machining.
- Excellent surface roughness comparable to grinding.
- Improved machining efficiency with higher speeds and feeds.
- Lineup of low feed WG type and high feed WH type.

■ Application Range



Use WH type for high-rigidity workpieces and equipment, and WG type for issues of undulation or chatter.

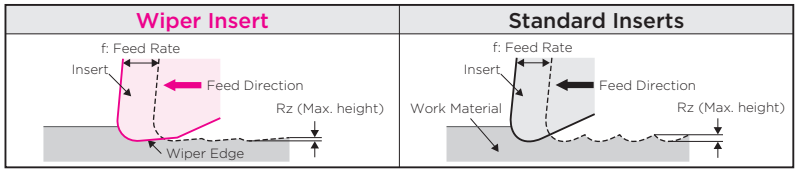
■ Surface Finish



The wiper insert offers good surface finish and improved machining efficiency.

Work Material : SCM415H (60HRC)
Tool Cat. No. : CNGA120408
Cutting Conditions: vc = 135m/min, ap = 0.1mm, Dry

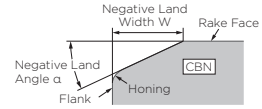
■ Wiper Insert Operation



■ WG type / WH type Cutting Edge Specifications

Type	Series	Notation	Cutting Edge Specification Identification Code	α	W	Honing
Wiper	WG type	WG	S01215	15°	0.12	Yes
	WH type	WH	S01215	15°	0.12	Yes

Cutting edge specification identification code



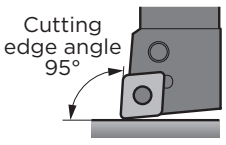
S 0 1 2 1 5
- Negative Land Width
- Negative Land Angle
- Cutting Edge Shape T: Negative Land S: Negative Land + Honing

Example: S01215
→ 15°/0.12mm Negative Land with Honing

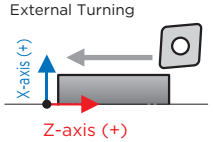
■ Precautions When Using Wiper Inserts

CNGA type/CCGW type/WNGA type WG type / WH type Wiper Insert

· Use a holder with a cutting edge angle of 95°.
· Machining program modification required as CNGA type / CCGW type / WNGA type wiper inserts do not comply with the ISO standard profiles.
Correct the cutting edge position (tool offset) as explained on the right.



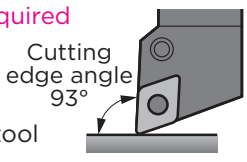
CNGA type / CCGW type / WNGA type Wiper Insert Cutting Edge Position Offset (WG type / WH type)



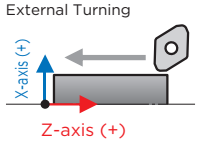
Corner Radius	Type	X-axis direction	Z-axis direction
R0.4	WG type	-0.02	-0.02
	WH type	-0.06	-0.06
R0.8/R1.2	WG type	-0.01	-0.01
	WH type	-0.06	-0.06

DNGA type / DCGW type WG type / WH type Wiper Insert

· Use a holder with a cutting edge angle of 93°.
· Machining program modification required as DNGA type / DCGW type wiper inserts do not comply with the ISO standard profiles.
Correct the cutting edge position (tool offset) as explained on the right.



DNGA type / DCGW type Wiper Insert Cutting Edge Position Offset (WG type / WH type)



Corner Radius	Type	X-axis direction	Z-axis direction
R0.4	WG type	-0.17	-0.01
	WH type	-0.70	-0.06
R0.8	WG type	-0.05	0
	WH type	-0.58	-0.05

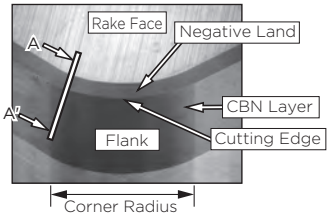
Note: Unlike other contour shapes, the DNGA/DCGW types can only exhibit wiper effect for external and internal diameter machining, and cannot be used for facing.

SUMIBORON Insert Edge Specifications

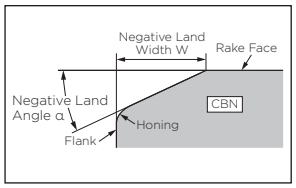
SUMIBORON Insert Edge Treatment

All SUMIBORON inserts are enhanced with the optimum cutting edge preparation for the various grades and geometries (shown on the right). This is to avoid cutting edge fracture caused by heavy loads generated during the machining of high-hardness materials such as hardened steel.
As the pioneer of CBN tools, SUMIBORON's vast selection of grades and edge treatment combinations is our trump card for hardened steel machining.

Close-up of cutting edge



Section A-A'



■ SUMIBORON Insert Edge Specification Overview

Series	Work Material	Grade	Neg.-Pos.	Standard: Cutting Edge Specification Identification Code	Standard: α	Standard: W	Standard: Honing	Low Cutting Force type L: Notation	Low Cutting Force type L: Cutting Edge Specification Identification Code	Low Cutting Force type L: α	Low Cutting Force type L: W	Low Cutting Force type L: Honing	Strong-edged type H / U: Notation	Strong-edged type H / U: Cutting Edge Specification Identification Code	Strong-edged type H / U: α	Strong-edged type H / U: W	Strong-edged type H / U: Honing	High-efficiency type E: Notation	High-efficiency type E: Cutting Edge Specification Identification Code	High-efficiency type E: α	High-efficiency type E: W	High-efficiency type E: Honing
Uncoated SUMIBORON	Hardened Steel	BNX10	Negative/Positive	T01225	25°	0.12	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		BNX20	Negative/Positive	S01225	25°	0.12	Yes	LT	T01215*	15°	0.12	No	—	—	—	—	—	—	—	—	—	—
		BNX25	Negative/Positive	S01725	25°	0.17	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		BN1000	Negative/Positive	S01225	25°	0.12	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		BN2000	Negative/Positive	S01225	25°	0.12	Yes	LT	T01215	15°	0.12	No	HS	S01235	35°	0.12	Yes	—	—	—	—	—
		BN350	Negative	T01225	25°	0.12	No	—	—	—	—	—	HT	T01235	35°	0.12	No	—	—	—	—	—
			Positive	T01235	35°	0.12	No						—	—	—	—	—	—	—	—	—	—
	Cast Iron Sintered Alloy Exotic Alloy	BN500	Negative/Positive	T01215	15°	0.12	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		BN7125	Negative/Positive	T01215	15°	0.12	No	LF	—	0°	0	No	HS	S01225	25°	0.12	Yes	—	—	—	—	—
								LE	—	0°	0	Yes										
		BN7000	Negative/Positive	T01215	15°	0.12	No	LF	—	0°	0	No	HS	S01225	25°	0.12	Yes	—	—	—	—	—
		BN7115	Negative/Positive	T01215	15°	0.12	No	LF	—	0°	0	No	HS	S00525	25°	0.05	Yes	—	—	—	—	—
								LE	—	0°	0	Yes	US	S01225	25°	0.12	Yes	—	—	—	—	—
								LS	S00715	15°	0.07	Yes	—	—	—	—	—	—	—	—	—	—
		BN7500	Negative/Positive	T01215	15°	0.12	No	LF	—	0°	0	No	HS	S00525	25°	0.05	Yes	—	—	—	—	—
								LE	—	0°	0	Yes										
								LS	S00715	15°	0.07	Yes										
		BNS8125	Negative	T02020	20°	0.2	No	LF	—	—	—	No	—	—	—	—	—	—	—	—	—	—
Coated SUMIBORON	Hardened Steel	BNC2105	Negative/Positive	S01225	25°	0.12	Yes	LS	S00515	15°	0.05	Yes	HS	S01730	30°	0.17	Yes	ES	S00535	35°	0.05	Yes
		BNC2115	Negative/Positive	S01225	25°	0.12	Yes	LS	S00515	15°	0.05	Yes	HS	S01730	30°	0.17	Yes	ES	S00535	35°	0.05	Yes
		BNC2125	Negative/Positive	S01225	25°	0.12	Yes	LS	S00515	15°	0.05	Yes	HS	S02735	35°	0.27	Yes	ES	S00535	35°	0.05	Yes
		BNC2135	Negative/Positive	S01225	25°	0.12	Yes	LS	S00515	15°	0.05	Yes	HS	S01735	35°	0.17	Yes	ES	S00535	35°	0.05	Yes
		BNC2010	Negative/Positive	S01225	25°	0.12	Yes	LE	—	0°	0	Yes	HS	S01730	30°	0.17	Yes	ES	S00535	35°	0.05	Yes
		BNC2020	Negative/Positive	S01225	25°	0.12	Yes	LT	T00515	15°	0.05	No	HS	S02735	35°	0.27	Yes	ES	S00535	35°	0.05	Yes
		BNC200	Negative/Positive	S01225	25°	0.12	Yes	LS	S01015	15°	0.10	Yes	HS	S01735	35°	0.17	Yes	—	—	—	—	—
		BNC300	Negative/Positive	S01225	25°	0.12	Yes	LS	S00515	15°	0.05	Yes	HS	S01735	35°	0.17	Yes	—	—	—	—	—
	Cast Iron	BNC500	Negative/Positive	S01215	15°	0.12	Yes	—	—	—	—	—	HS	S01225	25°	0.12	Yes	—	—	—	—	—
	Cast Iron/Hardened Steel	BNC8115	Negative	S02020	20°	0.2	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
SUMIBORON BINDERLESS	Cast Iron/Exotic Alloy Cemented Carbide/ Hard Brittle Material	NCB100	Negative/Positive	T01215	15°	0.12	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

*BNX20 inserts with an inscribed circle of less than ø4.76 will have an identification code of T00715.

■ Insert Edge Specification with Wiper/Chipbreaker

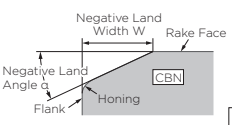
Type	Notation	Cutting Edge Specification Identification Code	α	W	Honing	Uncoated SUMIBORON: BN2000	Uncoated SUMIBORON: BNS8125	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2010	BNC2020	BNC200	BNC500	BNC8115
Wiper	WG	S01215	15°	0.12	Yes	●		●	●	●	●	●	●		
	WH	S01215	15°	0.12	Yes	●		●	●	●	●	●	●		
	W	S01215	15°	0.12	Yes								●	●	
		S01715	15°	0.17	Yes										
		S02020	20°	0.20	Yes										●
		T02020	20°	0.20	No		●								
Wiper Sharp Edge	LFW	—	0°	0	No		□								
With Chipbreaker	N-FV	—	0°	0	Yes	●			●	●	●	●	●		
	N-LV	S00535	35°	0.05	Yes	●			●	●	●	●	●		
	N-SV	S01235	35°	0.12	Yes				●	●	●	●	●		

● mark: Standard stocked item □ mark: Made-to-order item

■ Edge Specification Identification Code

Edge Treatment Notation				
No	Standard Cutting Edge			
L	Low Cutting Force	+	F	Sharp Edge
E	High Efficiency		E	Honing
H	Strong Edged		T	Negative Land
U	Strong Edged		S	Negative Land + Honing
WG/WH/W	Wiper			
N-FV/N-LV/N-SV	With Chipbreaker			

● Cutting edge specification identification code



S 0 1 2 2 5

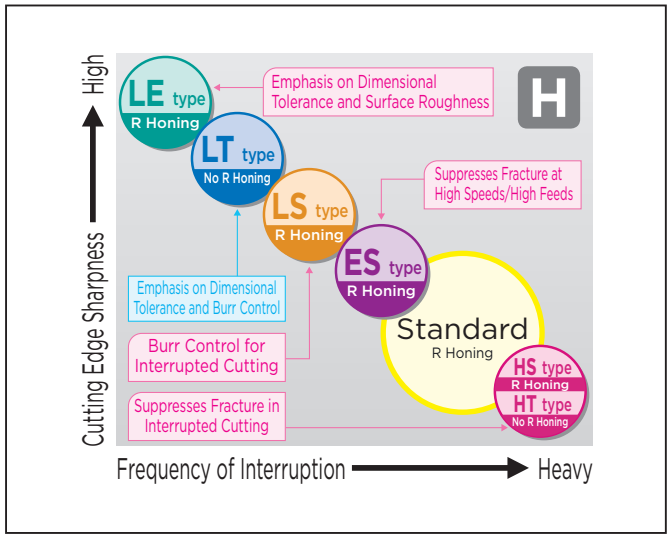
- 1st digit: Negative Land Width
- 2nd digit: Negative Land Angle
- Cutting Edge Shape T: Negative Land, S: Negative Land + Honing

Example: S01225
→ 25°/0.12mm Negative Land with Honing

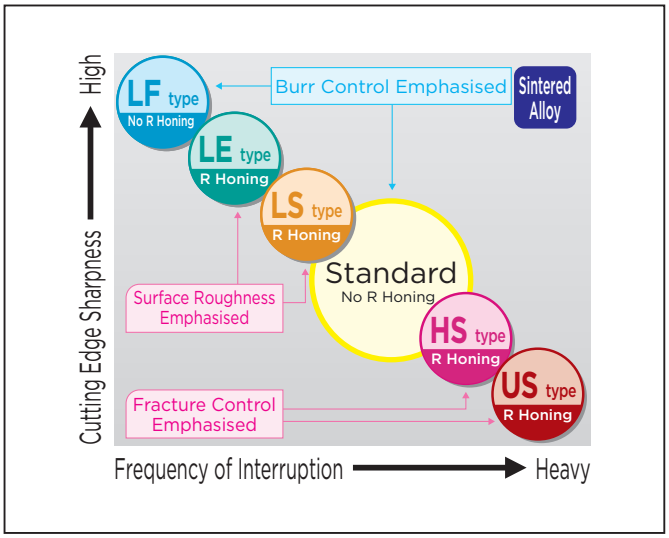
SUMIBORON Insert Edge Specifications

■ Edge Treatment Performance

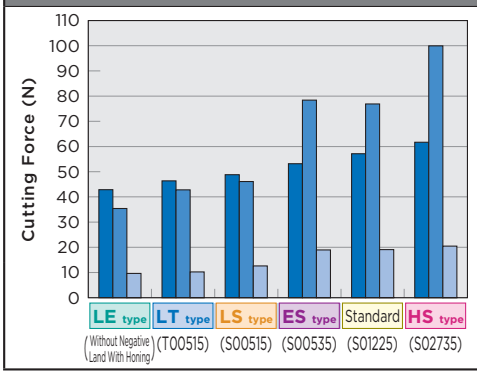
Machining of Hardened Steel



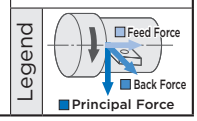
Machining of Sintered Alloy



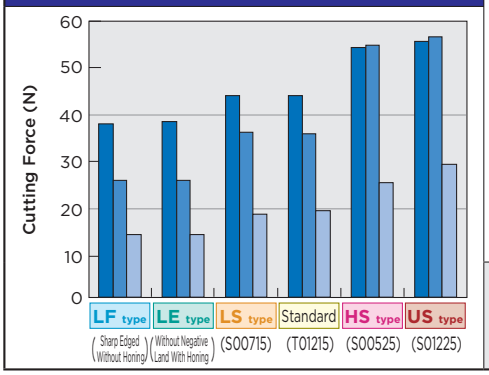
Comparison of Cutting Force with Coated SUMIBORON (vc = 100mm/min)



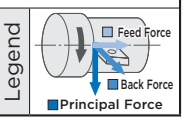
Work Material:
SCM415H
Tool Cat. No.
DNGA150408
Cutting Conditions:
vc = 100m/min
f = 0.1mm/rev
ap = 0.1mm
Dry



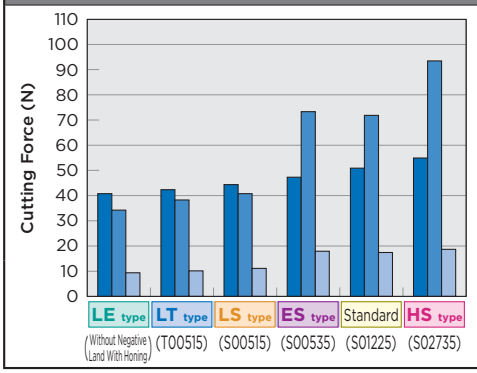
Cutting Force Comparison (Feed Rate: f = 0.05mm/rev)



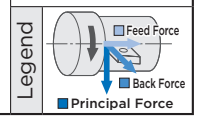
Work Material:
F-08C2 equivalent
Tool Cat. No.
CNGA120408
Cutting Conditions:
vc = 200m/min
f = 0.05mm/rev
ap = 0.2mm
Dry



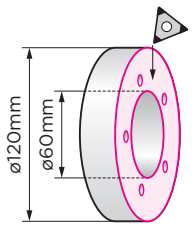
Comparison of Cutting Force with Coated SUMIBORON (vc = 200mm/min)



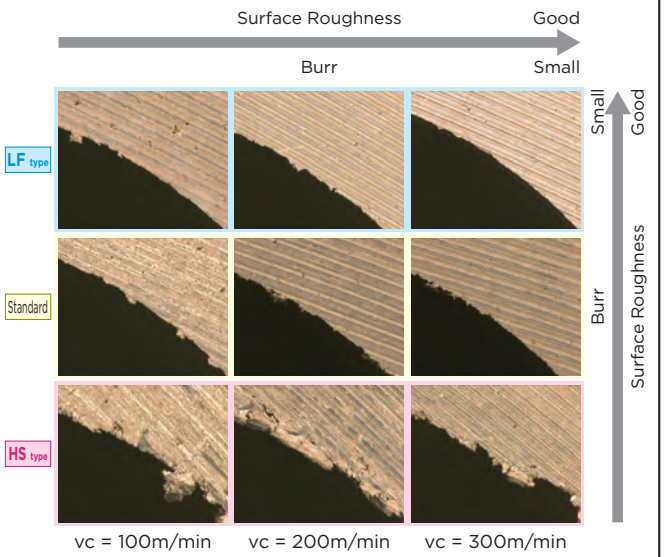
Work Material:
SCM415H
Tool Cat. No.
DNGA150408
Cutting Conditions:
vc = 200m/min
f = 0.1mm/rev
ap = 0.1mm
Dry

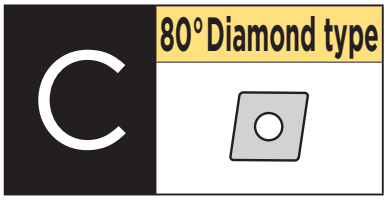


Relationship between Cutting Edge Treatment and Machining Quality



Work Material : F-08C2 equivalent
Tool Cat. No. : 3NU-TNGA 160408 (BN7500)
Cutting Edge Specification : LF type, Standard, HS type
Cutting Conditions : vc = 100, 200, 300m/min
f = 0.1mm/rev
ap = 0.2mm
Wet





Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

CN■■1204●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◔				✱	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◔	✱							
	Sintered Components							◔		●			

Applicable External Holders C10 to C12 | Applicable Boring Bars E15, E23 to E25

One-Use type / Negative (With Hole)

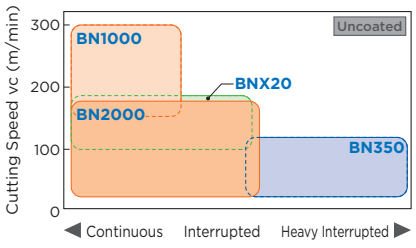
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-CNMA 120402**	1	1	0.2	2.5				●							—	—
		120404			0.4	2.4	▲	●	●	●	●	●		▲			—	—
		120408			0.8	2.3	▲	●	●	●	●	●		▲			—	—
		120412			1.2	2.2	▲	●	●	●	●	●		▲			—	—
	Standard	**T-NU-CNMA 120402**	10	1	0.2	2.5											—	—
		120404			0.4	2.4	▲	●	●	●	●	●					—	—
		120408			0.8	2.3	▲	●	●	●	●	●					—	—
		120412			1.2	2.2	▲	●	●	●	●	●					—	—
	Standard	**NU-CNGA 120404**	1	1	0.4	2.4	—	—	—	—	—	—	—	—	—	—	—	●
		120408			0.8	2.3	—	—	—	—	—	—	—	—	—	—	—	●
		120412			1.2	2.2	—	—	—	—	—	—	—	—	—	—	—	●

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

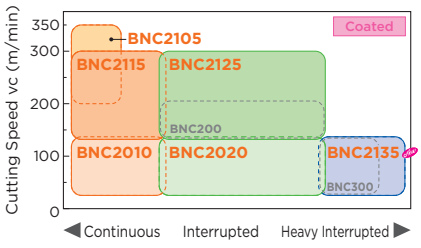
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

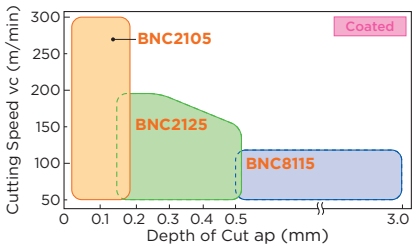
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel

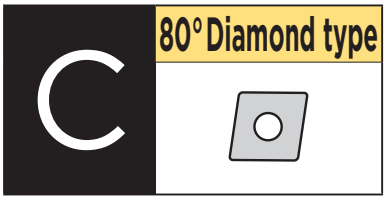


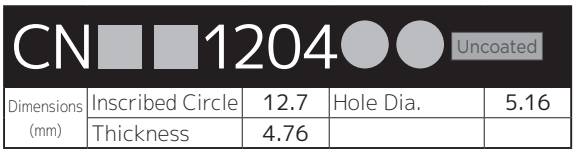
H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

SUMIBORON Inserts



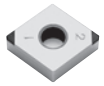
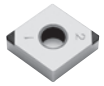
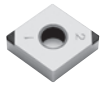


(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	○ ◕ ✱ ✲
S	Exotic Alloy	● ◕ ◔ ●
H	Hardened Steel	○ ◔ ● ◕ ✱
	Sintered Components	◕ ●

Applicable External Holders ☞ C10 to C12 Applicable Boring Bars ☞ E15, E23 to E25

Multi-Cornered One-Use type / Negative (With Hole)

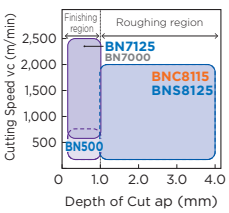
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON: BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	BINDERLESS SUMIBORON: NCB100
	Standard	2NU-CNGA 120404	1	2	0.4	2.4		●	●	●	●		●	▲	●	▲	—	
		120408			0.8	2.3		●	●	●	●		●	▲	●	▲	—	
		120412			1.2	2.2		●	●	●	●		●	▲	●	▲	—	
	Standard	T-2NU-CNGA 120404	10	2	0.4	2.4		●		●							—	—
		120408			0.8	2.3		●		●	●		●	▲			—	—
		120412			1.2	2.2		●		●							—	—
	Low Feed Wiper Insert	2NU-CNGA 120404WG	1	2	0.4	2.4				●							—	
		120408WG			0.8	2.4				●							—	
		120412WG			1.2	2.3				●							—	
	High Feed Wiper Insert	2NU-CNGA 120404WH	1	2	0.4	2.4				●							—	
		120408WH			0.8	2.3				●							—	
		120412WH			1.2	2.2				●							—	
	Light Cutting Chipbreaker	2NU-CNGM 120404N-LV	1	2	0.4	2.4	—	—		●	—	—	—	—	—	—	—	—
		120408N-LV			0.8	2.3	—	—		●	—	—	—	—	—	—	—	—
		120412N-LV			1.2	2.2	—	—		●	—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

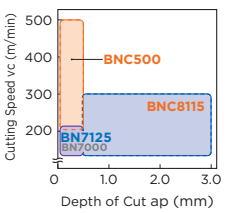
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

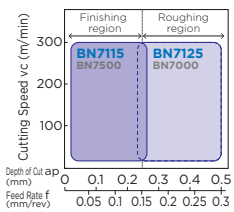
K Grey Cast Iron



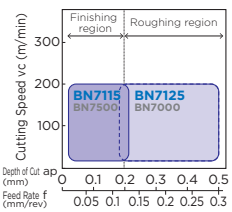
K Ductile Cast Iron



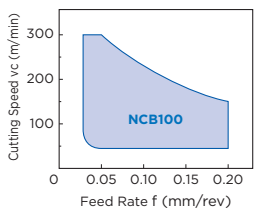
Sintered Alloy General Sintered Alloy



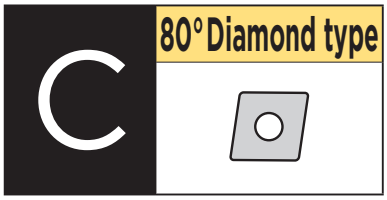
Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

CN■■1204●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application												
K	Cast Iron						○	●				✱	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	●	✱							
	Sintered Components							●		●			

Applicable External Holders ☞ C10 to C12
Applicable Boring Bars ☞ E15, E23 to E25

Multi-Cornered One-Use type / Negative (With Hole)

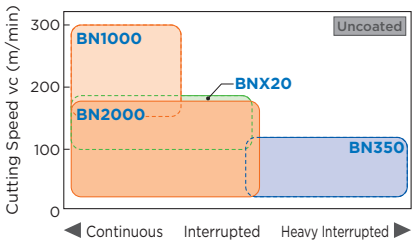
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BINDERLESS SUMIBORON BNS8125	NCB100
	L Low Resistance F Sharp Edge	**2NU-CNGA 120404LF**	1	2	0.4	2.4	—	—	—	—	—	—	●	▲	●	▲	—	—
		120408LF			0.8	2.3	—	—	—	—	—	—	●	▲	●	▲	—	—
		120412LF			1.2	2.2	—	—	—	—	—	—					—	—
	L Low Resistance E With Honing	**2NU-CNGA 120404LE**	1	2	0.4	2.4	—	—	—	—	—	—	●	—	●	▲	—	—
		120408LE			0.8	2.3	—	—	—	—	—	—	●	—	●	▲	—	—
	L Low Resistance T Negative Land	**2NU-CNGA 120404LT**	1	2	0.4	2.4	—		—	●	—	—	—	—	—	—	—	—
		120408LT			0.8	2.3	—		—	●	—	—	—	—	—	—	—	—
		120412LT			1.2	2.2	—		—	●	—	—	—	—	—	—	—	—
	L Low Resistance S Negative Land With Honing	**2NU-CNGA 120404LS**	1	2	0.4	2.4	—	—	—	—	—	—	—	—	●	▲	—	—
		120408LS			0.8	2.3	—	—	—	—	—	—	—			▲	—	—
	H Strong Edge T Negative Land	**2NU-CNGA 120404HT**	1	2	0.4	2.4	—	—	—	—	●	—	—	—	—	—	—	—
		120408HT			0.8	2.3	—	—	—	—	●	—	—	—	—	—	—	—
		120412HT			1.2	2.2	—	—	—	—	●	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**2NU-CNGA 120404HS**	1	2	0.4	2.4	—	—	—	●	—	—	●	▲	●		—	—
		120408HS			0.8	2.3	—	—	—	●	—	—	●	▲			—	—
		120412HS			1.2	2.2	—	—	—	●	—	—	●	▲			—	—
	U Strong Edge S Negative Land With Honing	**2NU-CNGA 120404US**	1	2	0.4	2.4	—	—	—	—	—	—	—	—	●	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

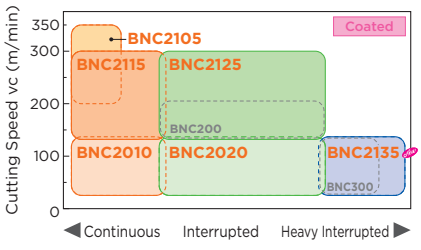
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

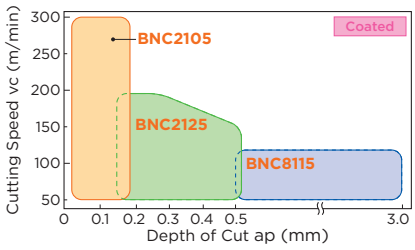
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

C 80° Diamond type

CN■■1204●● Uncoated

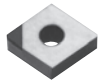
Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
	K	Cast Iron
	S	Exotic Alloy
	H	Hardened Steel
		Sintered Components

Applicable External Holders C10 to C12 | Applicable Boring Bars E15, E23 to E25

Negative type (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Unit	Corner Count	Corner Ballnose Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CNMA 120404**	1	1	0.4	4.6		●		●		●					—	—
		120408			0.8	4.5		●		●		●		▲			—	—
		120412			1.2	4.4		●		●		●		▲			—	—

Uncoated SUMIBORON | BINDERLESS SUMIBORON

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

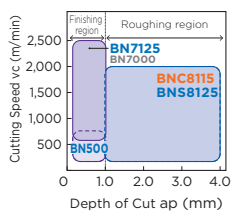
Solid type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Unit	Corner Count	Corner Ballnose Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CNGA 120408**	1	4	0.8	12.9	—	—	—	—	—	—	—	—	—	—	●	—
		120412			1.2	12.9	—	—	—	—	—	—	—	—	—	—	●	—

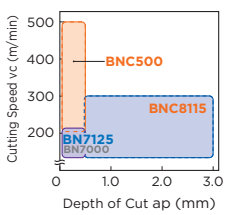
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

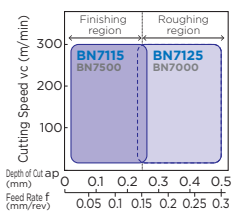
K Grey Cast Iron



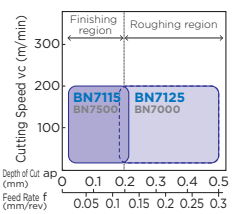
K Ductile Cast Iron



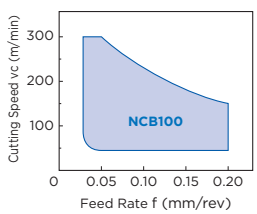
Sintered Alloy General Sintered Alloy



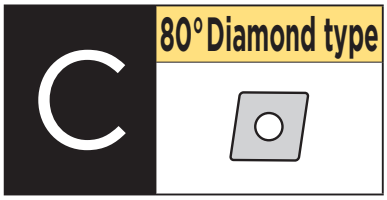
Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		Coated SUMIBORON								
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✱
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										

CNG■1204●● Coated

Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

Applicable External Holders ☞C10 to C12 Applicable Boring Bars ☞E15, E23 to E25

Multi-Cornered One-Use type / Negative (With Hole)

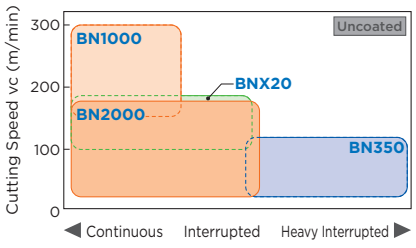
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**2NC-CNGA 120404**	1	2	0.4	2.4			●		●	●	▲			—
		120408			0.8	2.3			●		●	●	▲			—
		120412			1.2	2.2			●		●	●				—
		120416*			1.6	3.3					●	●	▲	●		—
		120420*			2.0	3.2					●	●	▲	●		—
		120424*			2.4	3.1					●	●	▲	●		—
	Standard	**4NC-CNGA 120402**	1	4	0.2	2.4		●	●		●	●				—
		120404			0.4	2.4	●	●	●	●	●	●	▲	●	●	—
		120408			0.8	2.3	●	●	●	●	●	●	▲	●	●	—
		120412			1.2	2.2	●	●	●	●	●	●	▲	●	●	—
		120416*			1.6	3.3		●	●	●	●	●	▲	●		—
		120420*			2.0	3.2		●	●	●	●	●	▲	●		—
		120424*			2.4	3.1		●	●	●	●	●	▲	●		—
	Low Feed Wiper Insert	**4NC-CNGA 120404WG**	1	4	0.4	2.4	●	●	●		●	●	▲			—
		120408WG			0.8	2.4	●	●	●		●	●	▲			—
		120412WG			1.2	2.3	●	●	●		●	●	▲			—
	High Feed Wiper Insert	**4NC-CNGA 120404WH**	1	4	0.4	2.4	●	●	●		●	●	▲			—
		120408WH			0.8	2.3	●	●	●		●	●	▲			—
		120412WH			1.2	2.2	●	●	●		●	●	▲			—
	Wiper Insert	**4NC-CNGA 120404W**	1	4	0.4	2.4							▲			—
		120408W			0.8	2.3							▲		●	—
		120412W			1.2	2.2										—
	Finishing Chipbreaker	**4NC-CNGG 120404N-FV**	1	4	0.4	2.4		●	●	—	●	●	▲	—		—
		120408N-FV			0.8	2.3		●	●	—	●	●	▲	—		—
		120412N-FV			1.2	2.2		●	●	—	●	●	▲	—		—
	Light Cutting Chipbreaker	**4NC-CNGG 120404N-LV**	1	4	0.4	2.4		●	●	—	●	●	▲	—		—
		120408N-LV			0.8	2.3		●	●	—	●	●	▲	—		—
		120412N-LV			1.2	2.2		●	●	—	●	●	▲	—		—
	Carburised Layer Removal Chipbreaker	**4NC-CNGG 120404N-SV**	1	4	0.4	2.4				—				—		—
		120408N-SV			0.8	2.3		●	●	—		●	▲	—		—
		120412N-SV			1.2	2.2		●	●	—		●	▲	—		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33

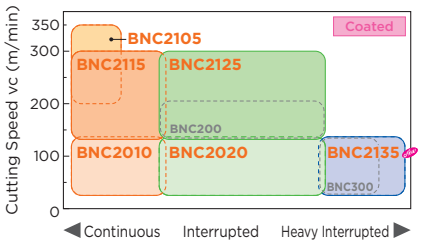
*For use with the SUMIBORON Special Holders for High-Efficiency Machining shown on page L129.

SUMIBORON Application Range Map

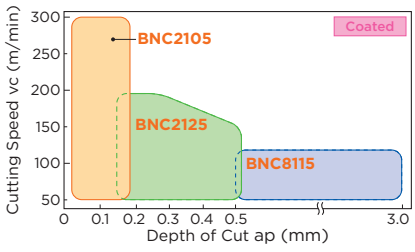
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



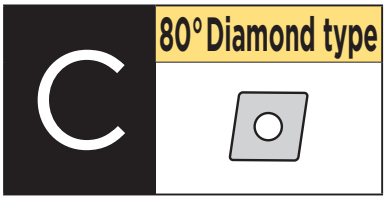
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



CNG■1204●● Coated

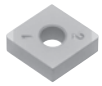
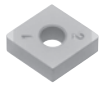
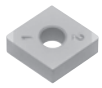
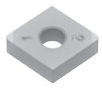
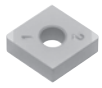
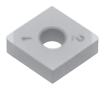
Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application											
K	Cast Iron									●	✱
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										

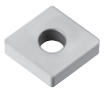
Applicable External Holders C10 to C12 | Applicable Boring Bars E15, E23 to E25

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	L Low Resistance E With Honing	**2NC-CNGA 120404LE**	1	2	0.4	2.4	—	—	—	—	●	—	—	—	—	—
		120408LE			0.8	2.3	—	—	—	—	●	—	—	—	—	—
		120412LE			1.2	2.2	—	—	—	—	●	—	—	—	—	—
	L Low Resistance T Negative Land	**2NC-CNGA 120402LT**	1	2	0.2	2.4	—	—	—	—	—	●	—	—	—	—
		120404LT			0.4	2.4	—	—	—	—	—	●	—	—	—	—
		120408LT			0.8	2.3	—	—	—	—	—	●	—	—	—	—
		120412LT			1.2	2.2	—	—	—	—	—	●	—	—	—	—
	L Low Resistance S Negative Land With Honing	**2NC-CNGA 120402LS**	1	2	0.2	2.4			●		—	—		—	—	—
		120404LS			0.4	2.4	●	●	●	●	—	—		●	—	—
		120408LS			0.8	2.3	●	●	●	●	—	—		●	—	—
		120412LS			1.2	2.2	●	●	●	●	—	—		●	—	—
	L Low Resistance S Negative Land With Honing	**4NC-CNGA 120404LS**	1	4	0.4	2.4	—	—	—		—	—	▲		—	—
		120408LS			0.8	2.3	—	—	—		—	—	▲		—	—
		120412LS			1.2	2.2	—	—	—		—	—	▲		—	—
	H Strong Edge S Negative Land With Honing	**4NC-CNGA 120404HS**	1	4	0.4	2.4		●	●	●	●	●	▲	●	●	—
		120408HS			0.8	2.3		●	●	●	●	●	▲	●	●	—
		120412HS			1.2	2.2		●	●	●	●	●	▲	●	●	—
	E High Efficiency S Negative Land With Honing	**4NC-CNGA 120404ES**	1	4	0.4	2.4						●	—	—	—	—
		120408ES			0.8	2.3						●	—	—	—	—
		120412ES			1.2	2.2						●	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

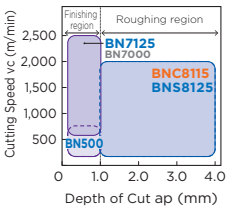
Solid type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**CNGA 120408**	1	4	0.8	12.9	—	—	—	—	—	—	—	—	—	●
		CNGA 120412			1.2	12.9	—	—	—	—	—	—	—	—	—	●

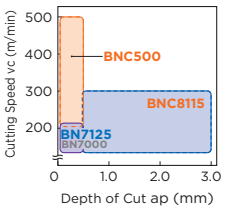
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

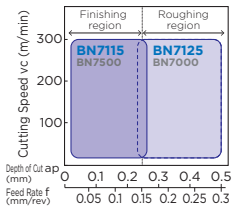
K Grey Cast Iron



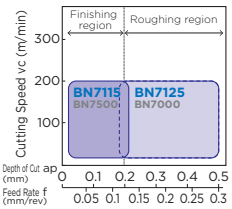
K Ductile Cast Iron



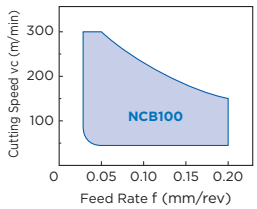
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

C 80° Diamond type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application												
K	Cast Iron						○	◔				✖	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◔	✖							
	Sintered Components							◔		●			

CNGN0903●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders ☞ L125

Uncoated SUMIBORON

BINDERLESS SUMIBORON

Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CNGN 090308**	1	4	0.8	9.5	—	—	—	—	—	—	—	—	—	—	●	—
		090312			1.2	9.4	—	—	—	—	—	—	—	—	—	—	●	—
	L Low Resistance F Sharp Edge	**CNGN 090308LF**	1	4	0.8	9.5	—	—	—	—	—	—	—	—	—	—		—
		090312LF			1.2	9.4	—	—	—	—	—	—	—	—	—	—		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

CNGN0903●● Coated

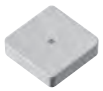
Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders ☞ L125

Recommended Application												
K	Cast Iron									●	✖	
S	Exotic Alloy											
H	Hardened Steel	○	●	◔	✖	○	◔					
	Sintered Components											

Coated SUMIBORON

Solid type / Negative (Without Hole)

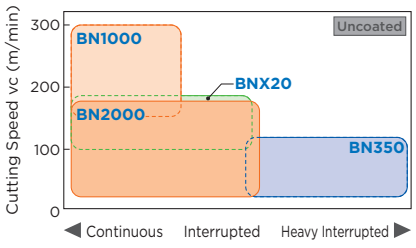
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**CNGN 090308**	1	4	0.8	9.5	—	—	—	—	—	—	—	—	—	●
		090312			1.2	9.4	—	—	—	—	—	—	—	—	—	●

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

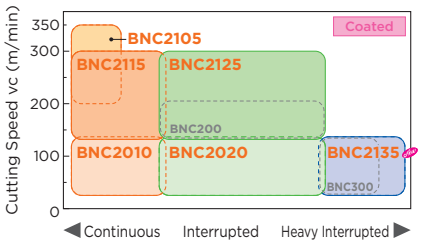
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

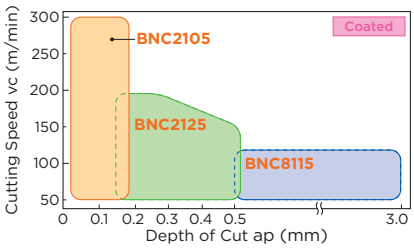
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



C 80° Diamond type

CNG■1204●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders L125

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON											BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CNGN 120408**	1	4	0.8	12.7	—	—	—	—	—	—	—	—	—	—	●	—
		120412			1.2	12.6	—	—	—	—	—	—	—	—	—	—	●	—
		120416			1.6	12.5	—	—	—	—	—	—	—	—	—	—	●	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

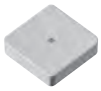
CNG■1204●● Coated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders L125

Recommended Application		Coated SUMIBORON									
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✱
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										

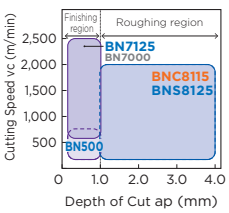
Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**CNGN 120408**	1	4	0.8	12.7	—	—	—	—	—	—	—	—	—	●
		120412			1.2	12.6	—	—	—	—	—	—	—	—	—	●
		120416			1.6	12.5	—	—	—	—	—	—	—	—	—	●

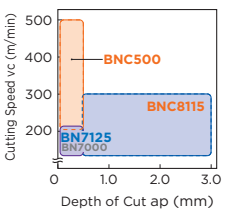
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

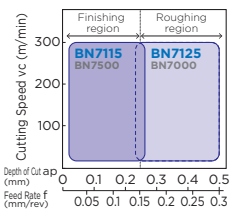
K Grey Cast Iron



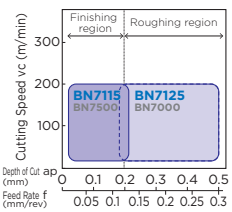
K Ductile Cast Iron



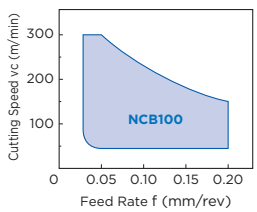
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



C 80° Diamond type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application												
K	Cast Iron						○	●				
S	Exotic Alloy							●				●
H	Hardened Steel	○	◔	●	●	✖						
	Sintered Components							●		●		

CNG■1204●● Uncoated

Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders ☞ L125

Solid type / Negative (Dimple Lock)

Uncoated SUMIBORON

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**CNGX 120408**	1	4	0.8	12.7	—	—	—	—	—	—	—	—	—	—	—	—
		120412			1.2	12.6	—	—	—	—	—	—	—	—	—	—	●	—
		120416			1.6	12.5	—	—	—	—	—	—	—	—	—	—	●	—

BINDERLESS SUMIBORON

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

CNG■1204●● Coated

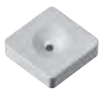
Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders ☞ L125

Recommended Application												
K	Cast Iron									●	✖	
S	Exotic Alloy											
H	Hardened Steel	○	●	●	✖	○	◔					
	Sintered Components											

Solid type / Negative (Dimple Lock)

Coated SUMIBORON

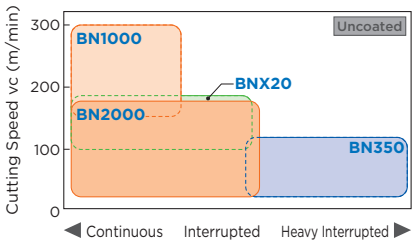
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**CNGX 120408**	1	4	0.8	12.7	—	—	—	—	—	—	—	—	—	—
		120412			1.2	12.6	—	—	—	—	—	—	—	—	—	●
		120416			1.6	12.5	—	—	—	—	—	—	—	—	—	●

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

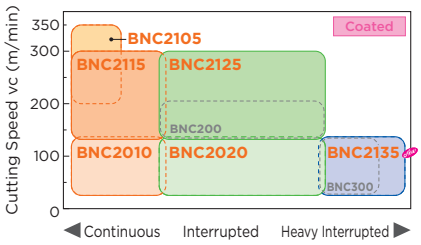
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

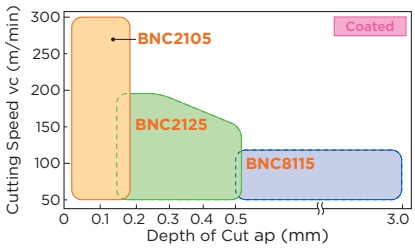
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel

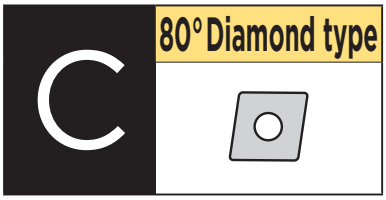


H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)





CCEW03X1●● Uncoated

Dimensions (mm)	Inscribed Circle	3.5	Hole Dia.	1.9
	Thickness	1.4		

Applicable Boring Bars E18, E20

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✱ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON											BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	**NU-CCEW 03X102LF**	1	1	0.2	1.2	—	—	—	—	—	—	●	▲	●	▲	—	—
		03X104LF			0.4	1.1	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**NU-CCEW 03X102LT**	1	1	0.2	1.2	—	●	—		—	—	—	—	—	—	—	—
		03X104LT			0.4	1.1	—	●	—		—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

CCEW03X1●● Coated

Dimensions (mm)	Inscribed Circle	3.5	Hole Dia.	1.9
	Thickness	1.4		

Applicable Boring Bars E18, E20

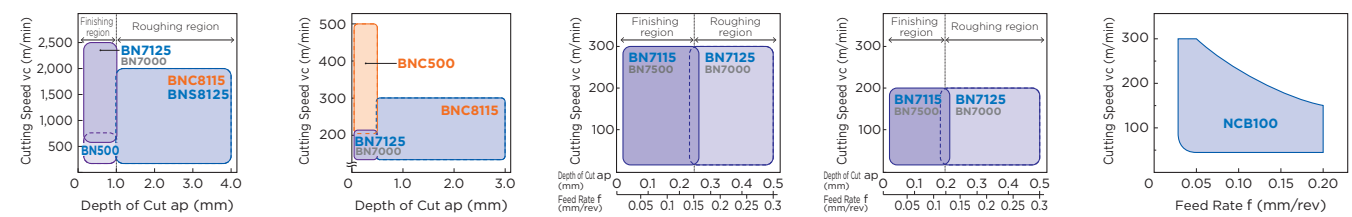
Recommended Application		Coated SUMIBORON									
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✱
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										

One-Use type / 7° Positive (With Hole)

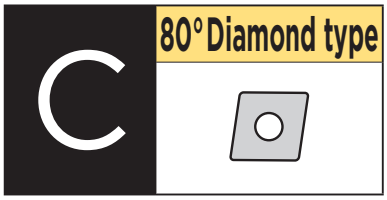
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	L Low Resistance E With Honing	**NC-CCEW 03X102LE**	1	1	0.2	1.2	—	—	—	—		—	—	—	—	—
		03X104LE			0.4	1.1	—	—	—	—		—	—	—	—	—
	L Low Resistance T Negative Land	**NC-CCEW 03X102LT**	1	1	0.2	1.2	—	—	—	—	—		—	—	—	—
		03X104LT			0.4	1.1	—	—	—	—	—		—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation, 2nd Recommendation; General Machining: 1st Recommendation, 2nd Recommendation; Interrupted Cutting: 1st Recommendation, 2nd Recommendation

CCEW04X1●● Uncoated

Dimensions (mm)	Inscribed Circle	4.3	Hole Dia.	2.3
	Thickness	1.8		

Applicable Boring Bars E18, E20

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◉				✖	
S	Exotic Alloy							●				◉	●
H	Hardened Steel	○	◔	●	◉	✖							
	Sintered Components							◉		●			

One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	**NU-CCEW 04X102LF**	1	1	0.2	1.7	—	—	—	—	—	—	●	▲			—	—
		04X104LF			0.4	1.6	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**NU-CCEW 04X102LT**	1	1	0.2	1.7	—	●	—		—	—	—	—	—	—	—	—
		04X104LT			0.4	1.6	—	●	—		—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

CCEW04X1●● Coated

Dimensions (mm)	Inscribed Circle	4.3	Hole Dia.	2.3
	Thickness	1.8		

Applicable Boring Bars E18, E20

Recommended Application		Coated SUMIBORON								
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron								●	✖	
S	Exotic Alloy										
H	Hardened Steel	○	●	◉	✖	○	◔				
	Sintered Components										

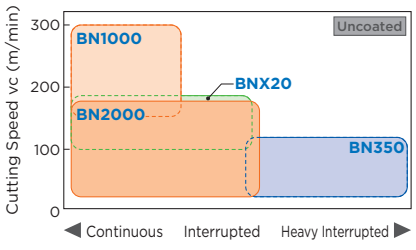
One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	L Low Resistance E With Honing	**NC-CCEW 04X102LE**	1	1	0.2	1.6	—	—	—	—		—	—	—	—	—
		04X104LE			0.4	1.5	—	—	—	—		—	—	—	—	—
	L Low Resistance T Negative Land	**NC-CCEW 04X102LT**	1	1	0.2	1.6	—	—	—	—	—		—	—	—	—
		04X104LT			0.4	1.5	—	—	—	—	—		—	—	—	—

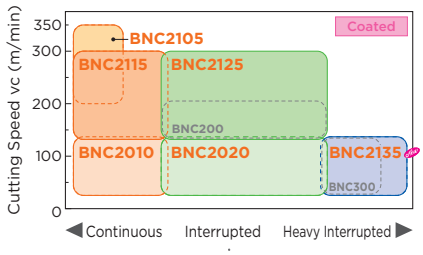
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

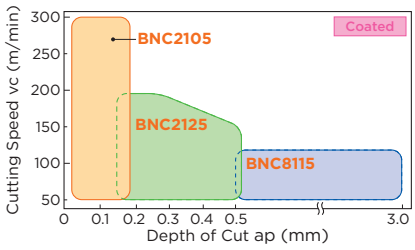
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

SUMIBORON Inserts

C 80° Diamond type

CCG■0602●● Uncoated

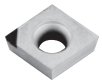
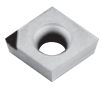
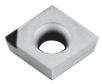
Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	2.38		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Applicable External Holders ☞ C13, D26, D30, D31, D38 Applicable Boring Bars ☞ E18 to E20

One-Use type / 7° Positive (With Hole)

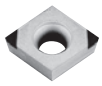
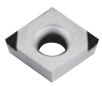
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-CCGW 060202**	1	1	0.2	2.4			●	●							—	
		060204			0.4	2.3*			●	●				▲			—	●
		060208			0.8	2.3				●							—	
		T-NU-CCGW 060202	10	1	0.2	2.4				●							—	—
		060204			0.4	2.3				●							—	—
		060208			0.8	2.3											—	—
	L Low Resistance T Negative Land	**NU-CCGW 060202LT**	1	1	0.2	2.4	—		—	●	—	—	—	—	—	—	—	—
		060204LT			0.4	2.3	—		—	●	—	—	—	—	—	—	—	—
		060208LT			0.8	2.3	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-CCGW 060202HS**	1	1	0.2	2.4	—	—	—	●	—	—					—	—
		060204HS			0.4	2.3	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

Depth of cut for one-use types is 0.5mm or less.

*NCB100 cutting edge length is 2.3.

Multi-Cornered One-Use type / 7° Positive (With Hole)

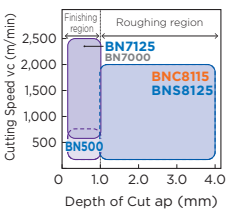
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**2NU-CCGW 060202**	1	2	0.2	2.4							●				—	
		060204			0.4	2.3							●	▲	●	▲	—	
	Finishing Chipbreaker	**2NU-CCGT 060204N-FV**	1	2	0.4	2.3	—	—		●	—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

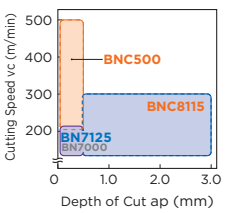
Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

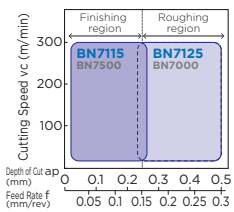
K Grey Cast Iron



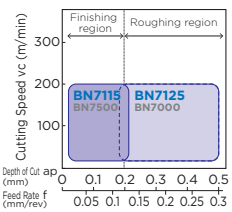
K Ductile Cast Iron



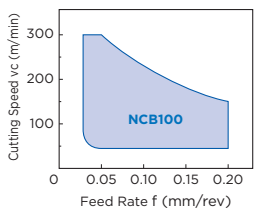
Sintered Alloy General Sintered Alloy



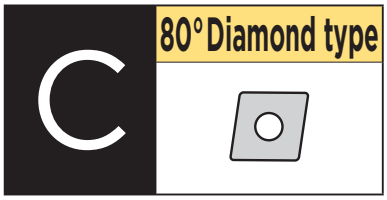
Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application		
K	Cast Iron	
S	Exotic Alloy	
H	Hardened Steel	○ ● ◔ ✖ ○ ◔
	Sintered Components	

CCG■0602●● Coated

Dimensions (mm)				
	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	2.38		

Applicable External Holders ☞ C13, D26, D30, D31, D38

Applicable Boring Bars ☞ E18 to E20

Multi-Cornered One-Use type / 7° Positive (With Hole)

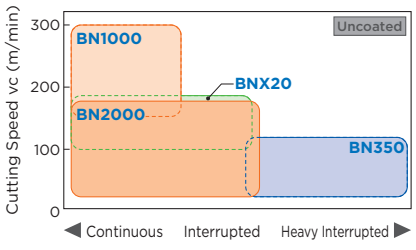
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	2NC-CCGW 060202	1	2	0.2	2.4	●	●	●		●	●	▲		●	—
		060204			0.4	2.3	●	●	●	●	●	●	▲		●	—
		060208			0.8	2.3		●	●	●					●	—
	Finishing Chipbreaker	2NC-CCGT 060204N-FV	1	2	0.4	2.3		●	●	—	●	●	▲	—		—
	L Low Resistance E With Honing	2NC-CCGW 060202LE	1	2	0.2	2.4	—	—	—	—	●	—	—	—	—	—
		060204LE			0.4	2.3	—	—	—	—	●	—	—	—	—	—
	L Low Resistance T Negative Land	2NC-CCGW 060202LT	1	2	0.2	2.4	—	—	—	—	—	●	—	—	—	—
		060204LT			0.4	2.3	—	—	—	—	—	●	—	—	—	—
	L Low Resistance S Negative Land With Honing	2NC-CCGW 060202LS	1	2	0.2	2.4		●	●		—	—	▲		—	—
		060204LS			0.4	2.3		●	●		—	—	▲		—	—
		060208LS			0.8	2.3		●	●		—	—			—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

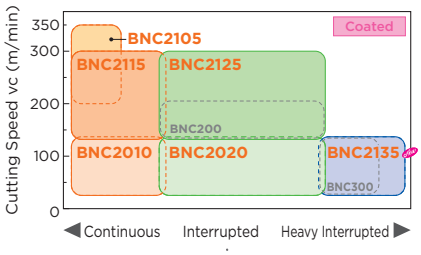
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

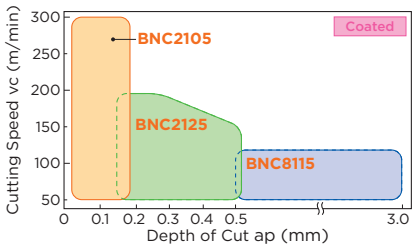
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

C 80° Diamond type

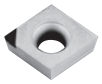
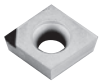
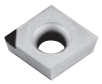
CCG■09T3●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
	K	Cast Iron
	S	Exotic Alloy
	H	Hardened Steel
		Sintered Components

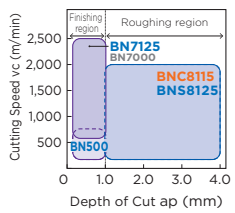
One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON: BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	BINDERLESS SUMIBORON: NCB100
	Standard	**NU-CCGW 09T302**	1	1	0.2	2.4			●	●							—	
		09T304			0.4	2.4			●	●				▲			—	●
		09T308			0.8	2.3				●							—	●
		T-NU-CCGW 09T302	10	1	0.2	2.4				●							—	—
		09T304			0.4	2.4				●							—	—
		09T308			0.8	2.3											—	—
	L Low Resistance T Negative Land	**NU-CCGW 09T302LT**	1	1	0.2	2.4	—		—	●	—	—	—	—	—	—	—	—
		09T304LT			0.4	2.4	—		—	●	—	—	—	—	—	—	—	—
		09T308LT			0.8	2.3	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-CCGW 09T302HS**	1	1	0.2	2.4	—	—	—	●	—	—					—	—
		09T304HS			0.4	2.4	—	—	—	●	—	—					—	—
		09T308HS			0.8	2.3	—	—	—	●	—	—					—	—

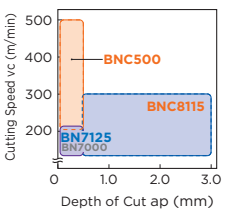
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details ☞ L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

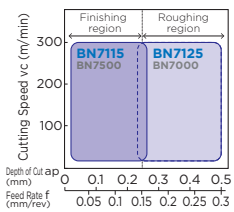
K Grey Cast Iron



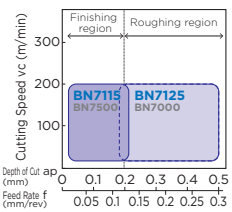
K Ductile Cast Iron



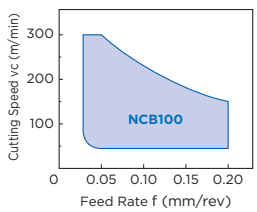
Sintered Alloy General Sintered Alloy



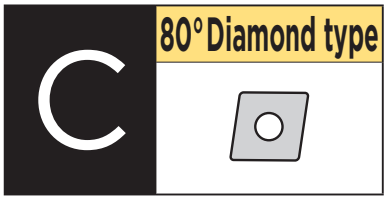
Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

CCG■09T3●● Uncoated

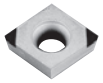
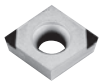
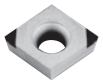
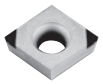
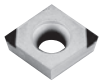
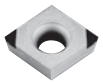
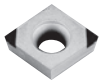
Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✖	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✖							
	Sintered Components							◕		●			

Applicable External Holders ☞C13, D26, D30, D31, D38 Applicable Boring Bars ☞E12, E18 to E20

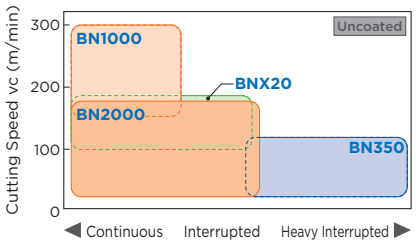
Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	2NU-CCGW 09T302	1	2	0.2	2.4							●				—	
		09T304			0.4	2.4							●	▲	●	▲	—	
		09T308			0.8	2.3							●	▲	●	▲	—	
	Low Feed Wiper Insert	2NU-CCGW 09T304WG	1	2	0.4	2.4				●							—	
		09T308WG			0.8	2.4				●							—	
	High Feed Wiper Insert	2NU-CCGW 09T304WH	1	2	0.4	2.4				●							—	
		09T308WH			0.8	2.3				●							—	
	Finishing Chipbreaker	2NU-CCGT 09T304N-FV	1	2	0.4	2.4	—	—		●	—	—	—	—	—	—	—	—
		09T308N-FV			0.8	2.3	—	—		●	—	—	—	—	—	—	—	—
	Light Cutting Chipbreaker	2NU-CCGT 09T304N-LV	1	2	0.4	2.4	—	—		●	—	—	—	—	—	—	—	—
		09T308N-LV			0.8	2.3	—	—		●	—	—	—	—	—	—	—	—
	L Low Resistance F Sharp Edge	2NU-CCGW 09T302LF	1	2	0.2	2.4	—	—	—	—	—	—	●				—	—
		09T304LF			0.4	2.4	—	—	—	—	—	—	●				—	—
		09T308LF			0.8	2.3	—	—	—	—	—	—	●				—	—
	L Low Resistance E With Honing	2NU-CCGW 09T302LE	1	2	0.2	2.4	—	—	—	—	—	—	●	—			—	—
		09T304LE			0.4	2.4	—	—	—	—	—	—	●	—			—	—
		09T308LE			0.8	2.3	—	—	—	—	—	—	●	—			—	—

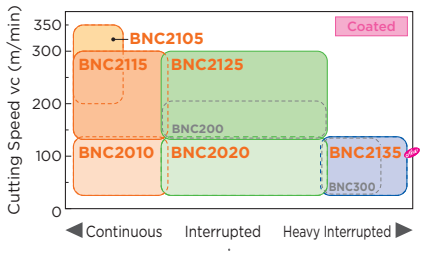
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details ☞L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

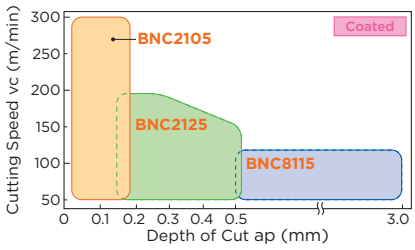
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

C 80° Diamond type

CCG■09T3●● Coated

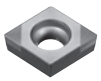
Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application										
K Cast Iron									●	✱
S Exotic Alloy										
H Hardened Steel	○	●	◕	✱	○	◔				
Sintered Components										

Applicable External Holders ☞C13, D26, D30, D31, D38 Applicable Boring Bars ☞E12, E18 to E20

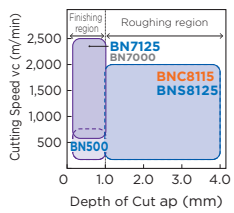
Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	2NC-CCGW 09T302	1	2	0.2	2.5		●	●		●	●	▲		●	—
		09T304			0.4	2.5	●	●	●	●	●	●	▲	●	●	—
		09T308			0.8	2.4	●	●	●	●	●	●	▲	●	●	—
		09T312 New			0.8	2.4	●	●	●							—
	Low Feed Wiper Insert	2NC-CCGW 09T304WG	1	2	0.4	2.4		●	●		●	●	▲			—
		09T308WG			0.8	2.3		●	●		●	●	▲			—
	High Feed Wiper Insert	2NC-CCGW 09T304WH	1	2	0.4	2.4		●	●		●	●	▲			—
		09T308WH			0.8	2.3		●	●		●	●	▲			—
	Finishing Chipbreaker	2NC-CCGT 09T304N-FV	1	2	0.4	2.4		●	●	—	●	●	▲	—		—
		09T308N-FV			0.8	2.3		●	●	—	●	●	▲	—		—
	Light Cutting Chipbreaker	2NC-CCGT 09T304N-LV	1	2	0.4	2.4		●	●	—	●	●	▲	—		—
		09T308N-LV			0.8	2.3		●	●	—	●	●	▲	—		—
	L Low Resistance E With Honing	2NC-CCGW 09T302LE	1	2	0.2	2.4	—	—	—	—	●	—	—	—	—	—
		09T304LE			0.4	2.4	—	—	—	—	●	—	—	—	—	—
		09T308LE			0.8	2.3	—	—	—	—	●	—	—	—	—	—

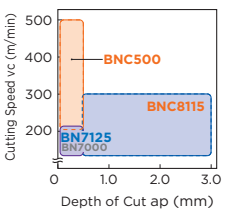
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

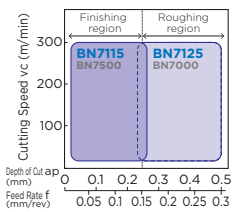
K Grey Cast Iron



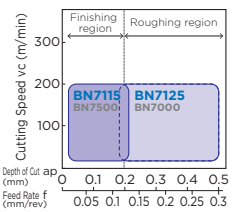
K Ductile Cast Iron



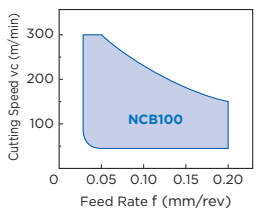
Sintered Alloy General Sintered Alloy



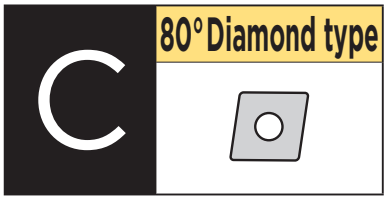
Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

CCG■09T3●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ⊗ 2nd Recommendation

Recommended Application		Coated SUMIBORON								
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron								●	✖	
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✖	○	◔				
	Sintered Components										

Applicable External Holders ☞C13, D26, D30, D31, D38 Applicable Boring Bars ☞E12, E18 to E20

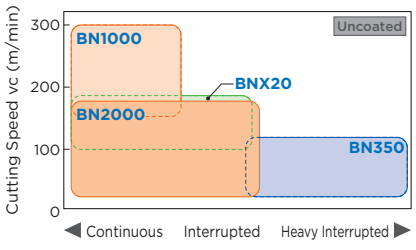
Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	L Low Resistance T Negative Land	**2NC-CCGW 09T302LT**	1	2	0.2	2.4	—	—	—	—	—	●	—	—	—	—
		09T304LT			0.4	2.4	—	—	—	—	—	●	—	—	—	—
		09T308LT			0.8	2.3	—	—	—	—	—	●	—	—	—	—
	L Low Resistance S Negative Land With Honing	**2NC-CCGW 09T302LS**	1	2	0.2	2.4		●	●		—	—	▲		—	—
		09T304LS			0.4	2.4	●	●	●	●	—	—	▲	●	—	—
		09T308LS			0.8	2.3	●	●	●	●	—	—	▲	●	—	—
	H Strong Edge S Negative Land With Honing	**2NC-CCGW 09T304HS**	1	2	0.4	2.4				●				●		—
		09T308HS			0.8	2.3				●				●		—

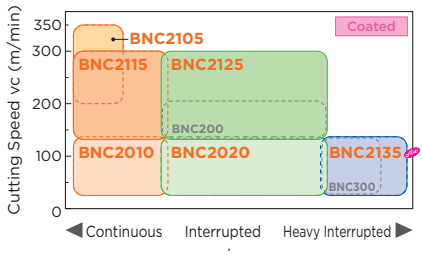
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

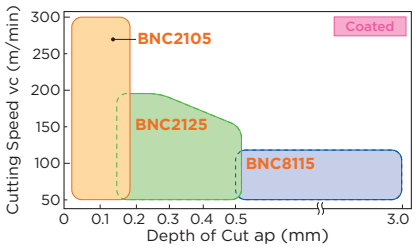
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

C 80° Diamond type

CCGN0401●● Uncoated

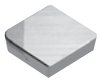
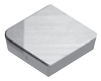
Dimensions (mm)				
	Inscribed Circle	4.76	Hole Dia.	-
	Thickness	1.59		

Applicable Holder: Special Holder

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application		
K	Cast Iron	○ ◕ ✖
S	Exotic Alloy	● ◕ ●
H	Hardened Steel	○ ◔ ● ◕ ✖
	Sintered Components	◕ ●

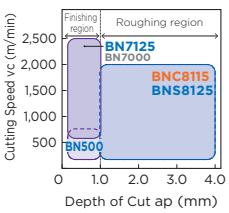
One-Use type / 7° Positive (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
							Uncoated SUMIBORON										BINDERLESS SUMIBORON	
	Standard	**NU-CCGN 040104**	1	1	0.4	2.5				●							—	
		040108			0.8	2.4				●							—	
	Standard	**T-NU-CCGN 040104**	10	1	0.4	2.5				●							—	—
		040108			0.8	2.4				●							—	—
	H Strong Edge S Negative Land With Honing	**NU-CCGN 040104HS**	1	1	0.4	2.5	—	—	—	●	—	—					—	—
		040108HS			0.8	2.4	—	—	—	●	—	—					—	—

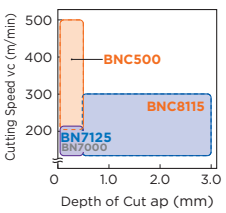
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details ☞ L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

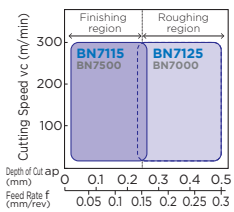
K Grey Cast Iron



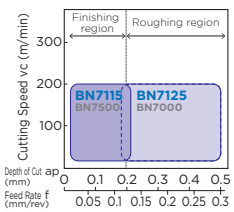
K Ductile Cast Iron



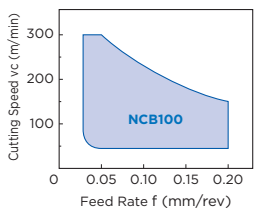
General Sintered Alloy

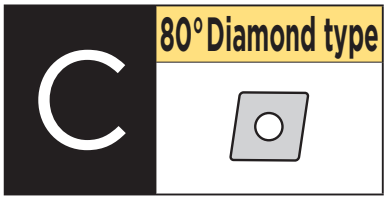


High-density Sintered Alloy



S Titanium Alloy





Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

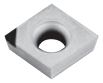
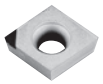
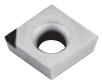
Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✖	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✖							
	Sintered Components							◕		●			

CPGW0802●● Uncoated

Dimensions (mm)	Inscribed Circle	7.94	Hole Dia.	3.4
	Thickness	2.38		

Applicable Boring Bars ☞ E21, E22

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length
	Standard	**NU-CPGW 080202**	1	1	0.2	2.3
		080204			0.4	2.3
		080208			0.8	2.2
	L Low Resistance T Negative Land	**NU-CPGW 080204LT**	1	1	0.4	2.3
	H Strong Edge S Negative Land With Honing	**NU-CPGW 080202HS**	1	1	0.2	2.3
		080204HS			0.4	2.3
		080208HS			0.8	2.2

Shape	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
				●							—	
			●	●							—	
				●							—	
	—		—	●	—	—	—	—	—	—	—	—
	—	—	—	●	—	—					—	—
	—	—	—	●	—	—					—	—
	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

*Depth of cut for one-use types is 0.5mm or less.

CPGW0802●● Coated

Dimensions (mm)	Inscribed Circle	7.94	Hole Dia.	3.4
	Thickness	2.38		

Applicable Boring Bars ☞ E21, E22

Recommended Application		Coated SUMIBORON									
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✖
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✖	○	◔				
	Sintered Components										

Multi-Cornered One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length
	Standard	**2NC-CPGW 080202**	1	2	0.2	2.3
		080204			0.4	2.3

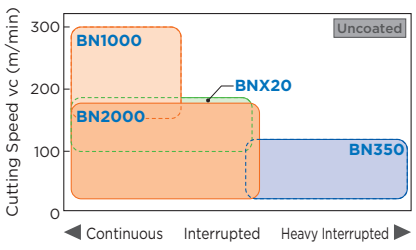
Shape	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
					●	●				—
					●	●				—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

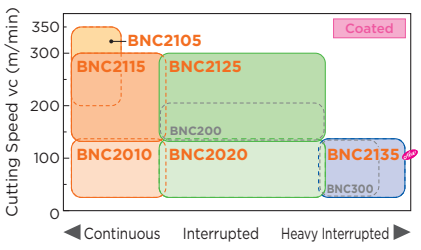
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

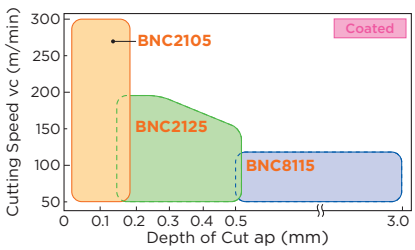
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



C 80° Diamond type

CPGW0903●● Uncoated

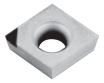
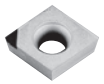
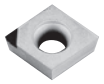
Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.18		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application												
K Cast Iron						○	◕				✱	
S Exotic Alloy							●				◕	●
H Hardened Steel	○	◔	●	◕	✱							
Sintered Components							◕		●			

Applicable Boring Bars ☞ E12, E21, E22

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON: BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	BINDERLESS SUMIBORON: NCB100
	Standard	**NU-CPGW 090302**	1	1	0.2	2.4			●	●							—	
		090304			0.4	2.4			●	●							—	
		090308			0.8	2.3			●	●							—	
	L Low Resistance T Negative Land	**NU-CPGW 090302LT**	1	1	0.2	2.4	—		—	●	—	—	—	—	—	—	—	—
		090304LT			0.4	2.4	—		—	●	—	—	—	—	—	—	—	—
		090308LT			0.8	2.3	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-CPGW 090302HS**	1	1	0.2	2.4	—	—	—	●	—	—					—	—
		090304HS			0.4	2.4	—	—	—	●	—	—					—	—
		090308HS			0.8	2.3	—	—	—	●	—	—					—	—

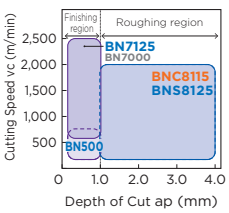
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

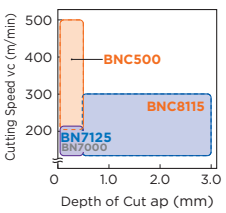
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

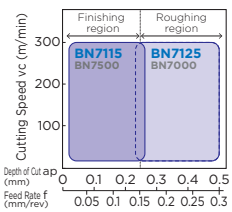
K Grey Cast Iron



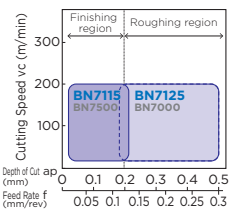
K Ductile Cast Iron



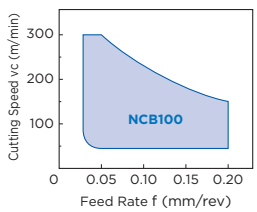
Sintered Alloy General Sintered Alloy

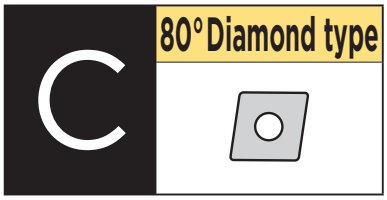


Sintered Alloy High-density Sintered Alloy



S Titanium Alloy





Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ⊛ 2nd Recommendation

Recommended Application	Coated SUMIBORON									
	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K Cast Iron									●	✖
S Exotic Alloy										
H Hardened Steel	○	●	◕	✖	○	◔				
Sintered Components										

CPG■0903●● Coated

Dimensions (mm)				
	Inscribed Circle	7.94	Hole Dia.	2.38
	Thickness	3.4		

Applicable Boring Bars E12, E21, E22

Multi-Cornered One-Use type / 11° Positive (With Hole)

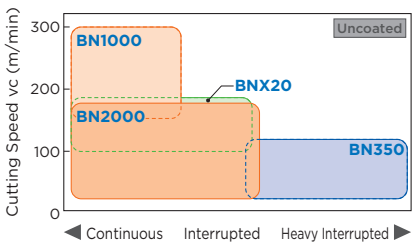
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	2NC-CPGW 090302	1	2	0.2	2.4					●	●				—
		090304			0.4	2.4					●	●				—
	Light Cutting Chipbreaker	2NC-CPGT 090304N-LV New	1	2	0.4	2.3		●	●	—				—		—
		090308N-LV New			0.8	2.2		●	●	—				—		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

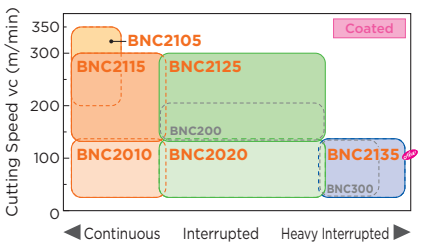
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

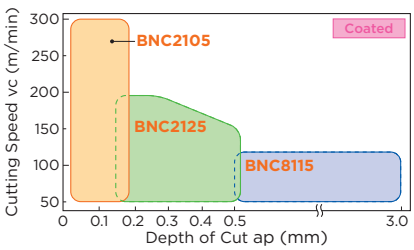
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



SUMIBORON Inserts

D 55° Diamond type

DNGA1104●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	✱ ●
S	Exotic Alloy	✱ ●
H	Hardened Steel	○ ● ◕ ✱ ○ ◔
	Sintered Components	

Applicable External Holders C16 | Applicable Boring Bars E32, E33

Multi-Cornered One-Use type / Negative (With Hole)

Coated SUMIBORON

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**2NC-DNGA 110404**	1	2	0.4	2.4		●	●		●	●				—
		110408			0.8	2.0		●	●		●	●				—
		110412			1.2	2.0		●	●		●	●				—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

DN■■1504●● Uncoated

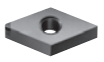
Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

Recommended Application		
K	Cast Iron	○ ◕ ✱
S	Exotic Alloy	◕ ● ◔ ●
H	Hardened Steel	○ ◔ ● ◕ ✱
	Sintered Components	◕ ●

Applicable External Holders C14 to C16 | Applicable Boring Bars E15, E31 to E33

One-Use type / Negative (With Hole)

Uncoated SUMIBORON

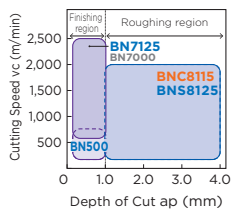
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-DNMA 150401**	1	1	0.1	2.7				●							—	—
		150402			0.2	2.5				●							—	—
		150404			0.4	2.4	▲	●	●	●	●	●		▲			—	—
		150408			0.8	2.0	▲	●	●	●	●	●		▲			—	—
		150412			1.2	1.9				●		●		▲			—	—
		T-NU-DNMA 150401	10	1	0.1	2.7											—	—
		150402			0.2	2.5											—	—
		150404			0.4	2.4	▲	●	●	●	●	●					—	—
		150408			0.8	2.0	▲	●	●	●	●	●					—	—
		150412			1.2	1.9						●					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

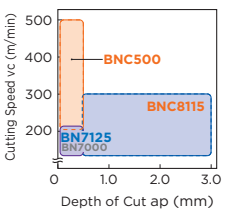
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

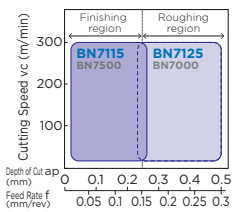
K Grey Cast Iron



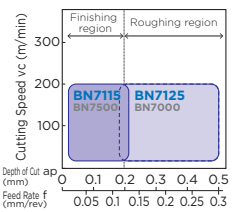
K Ductile Cast Iron



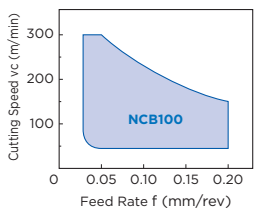
Sintered Alloy General Sintered Alloy



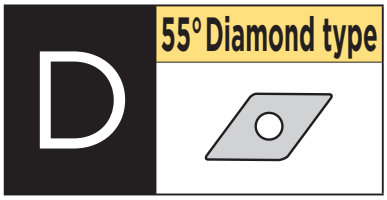
Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

DN■■1504●● Uncoated

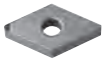
Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◔				✖	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◔	✖							
	Sintered Components							◔		●			

Applicable External Holders C14 to C16
Applicable Boring Bars E15, E31 to E33

One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-DNGA 150404**	1	1	0.4	2.4	—	—	—	—	—	—	—	—	—	—	—	●
		150408			0.8	2.0	—	—	—	—	—	—	—	—	—	—	—	●
		150412			1.2	1.9	—	—	—	—	—	—	—	—	—	—	—	●

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

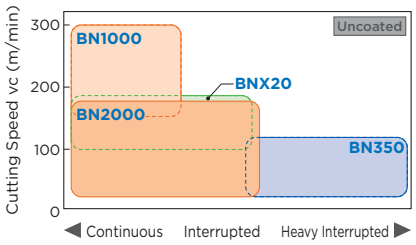
Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**2NU-DNGA 150404**	1	2	0.4	2.4		●	●	●	●		●	▲	●	▲	—	
		150408			0.8	2.0		●	●	●	●		●	▲	●	▲	—	
		150412			1.2	1.9				●			●	▲	●		—	
		T-2NU-DNGA 150404	10	2	0.4	2.4		●		●							—	—
		150408			0.8	2.0		●		●	●		●	▲			—	—
		150412			1.2	1.9											—	—
	Low Feed Wiper Insert	**2NU-DNGA 150404WG**	1	2	0.4	2.3				●							—	
		150408WG			0.8	2.0				●							—	
	High Feed Wiper Insert	**2NU-DNGA 150404WH**	1	2	0.4	2.1				●							—	
		150408WH			0.8	1.8				●							—	
	Light Cutting Chipbreaker	**2NU-DNGM 150404N-LV**	1	2	0.4	2.4	—	—		●	—	—	—	—	—	—	—	—
		150408N-LV			0.8	2.0	—	—		●	—	—	—	—	—	—	—	—
		150412N-LV			1.2	1.9	—	—		●	—	—	—	—	—	—	—	—

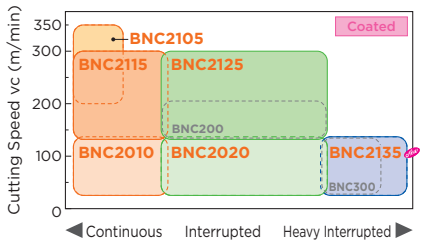
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

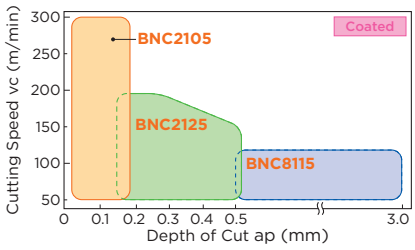
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



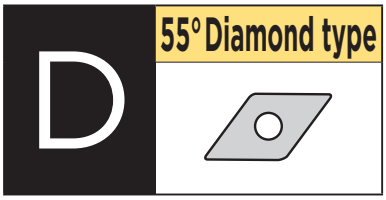
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



DN■■1504●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✱ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON											BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	K Cast Iron						○	◕				✱	
	S Exotic Alloy							●				◕	●
	H Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

Applicable External Holders ☞ C14 to C16 Applicable Boring Bars ☞ E15, E31 to E33

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	**2NU-DNGA 150404LF**	1	2	0.4	2.4	—	—	—	—	—	—	●	▲			—	—
		150408LF			0.8	2.0	—	—	—	—	—	—	●	▲			—	—
		150412LF			1.2	1.9	—	—	—	—	—	—	—	—			—	—
	L Low Resistance E With Honing	**2NU-DNGA 150404LE**	1	2	0.4	2.4	—	—	—	—	—	—	●	—			—	—
		150408LE			0.8	2.0	—	—	—	—	—	—	●	—			—	—
	L Low Resistance T Negative Land	**2NU-DNGA 150404LT**	1	2	0.4	2.4	—		—	●	—	—	—	—	—	—	—	—
		150408LT			0.8	2.0	—		—	●	—	—	—	—	—	—	—	—
		150412LT			1.2	1.9	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge T Negative Land	**2NU-DNGA 150404HT**	1	2	0.4	2.4	—	—	—	—	●	—	—	—	—	—	—	—
		150408HT			0.8	2.0	—	—	—	—	●	—	—	—	—	—	—	—
		150412HT			1.2	1.9	—	—	—	—		—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**2NU-DNGA 150404HS**	1	2	0.4	2.4	—	—	—	●	—	—	●	▲			—	—
		150408HS			0.8	2.0	—	—	—	●	—	—	●	▲			—	—
		150412HS			1.2	1.9	—	—	—	●	—	—	●		●		—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

*Depth of cut for one-use types is 0.5mm or less.

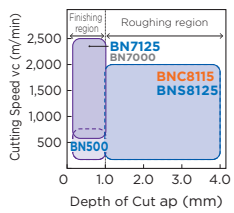
Negative type (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**DNMA 150404**	1	1	0.4	5.0		●		●							—	—
		150408			0.8	4.7		●		●		●		▲			—	—
		150412			1.2	4.3				●				▲			—	—

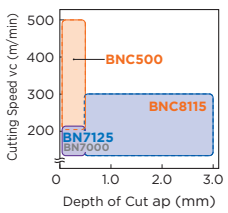
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

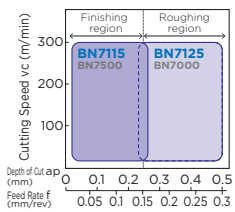
K Grey Cast Iron



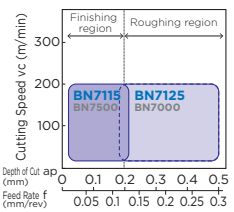
K Ductile Cast Iron



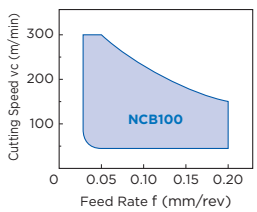
General Sintered Alloy



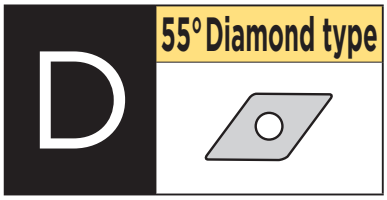
High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

DNG■1504●● Coated

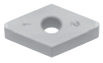
Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ⊗ 2nd Recommendation

Recommended Application		Coated SUMIBORON								
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✖
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✖	○	◔				
	Sintered Components										

Applicable External Holders ☞ C14 to C16
Applicable Boring Bars ☞ E15, E31 to E33

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**2NC-DNGA 150404**	1	2	0.4	2.4			●		●	●	▲			—
		150408			0.8	2.0			●		●	●	▲			—
		150412			1.2	1.9			●		●	●				—
		150416*1			1.6	3.4					●	●	▲	●		—
		150420*1			2.0	3.0					●	●	▲	●		—
		150424*1			2.4	2.7					●	●	▲	●		—
	Standard	**4NC-DNGA 150402**	1	4	0.2	2.5		●	●		●	●				—
		150404			0.4	2.4	●	●	●	●	●	●	▲	●	●	—
		150408			0.8	2.0	●	●	●	●	●	●	▲	●	●	—
		150412			1.2	1.9		●	●	●	●	●	▲	●	●	—
		150416*1			1.6	3.4		●	●	●	●	●	▲	●		—
		150420*1			2.0	3.0		●	●	●	●	●	▲	●		—
		150424*1			2.4	2.7		●	●	●	●	●	▲	●		—
	Low Feed Wiper Insert	**4NC-DNGA 150404WG***2	1	4	0.4	2.3		●	●		●	●	▲			—
		150408WG*2			0.8	1.9		●	●		●	●	▲			—
	High Feed Wiper Insert	**4NC-DNGA 150404WH***2	1	4	0.4	2.1		●	●		●	●	▲			—
		150408WH*2			0.8	1.8		●	●		●	●	▲			—

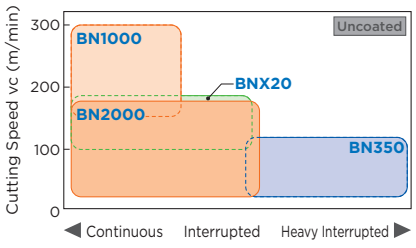
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

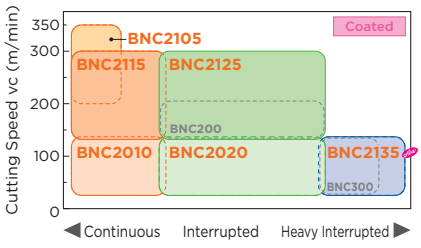
*1 For use with the SUMIBORON holders for high-efficiency machining shown on pages L129 and L130.
*2 Use a holder with a cutting edge angle of 93° .

SUMIBORON Application Range Map

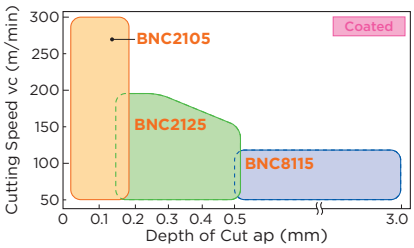
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



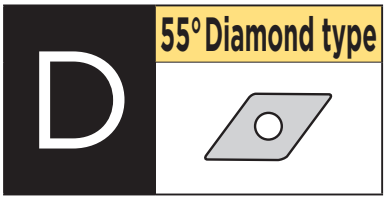
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



DNG■1504●● Coated

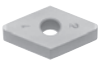
Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ● 1st Recommendation ○ 2nd Recommendation; Interrupted Cutting ✱ 1st Recommendation ✱ 2nd Recommendation

Recommended Application										
K	Cast Iron								●	✱
S	Exotic Alloy									
H	Hardened Steel	○	●	●	✱	○	○			
	Sintered Components									

Applicable External Holders ☞ C14 to C16 Applicable Boring Bars ☞ E15, E31 to E33

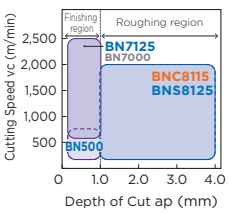
Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON								
							BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Finishing Chipbreaker	**4NC-DNGG 150404N-FV**	1	4	0.4	2.4		●	●	—	●	●	▲	—		—
		150408N-FV			0.8	2.0		●	●	—	●	●	▲	—		—
		150412N-FV			1.2	1.9		●	●	—	●	●	▲	—		—
	Light Cutting Chipbreaker	**4NC-DNGG 150404N-LV**	1	4	0.4	2.4		●	●	—	●	●	▲	—		—
		150408N-LV			0.8	2.0		●	●	—	●	●	▲	—		—
		150412N-LV			1.2	1.9		●	●	—	●	●	▲	—		—
	Carburised Layer Removal Chipbreaker	**4NC-DNGG 150404N-SV**	1	4	0.4	2.4				—				—		—
		150408N-SV			0.8	2.0		●	●	—	●	●	▲	—		—
		150412N-SV			1.2	1.9		●	●	—	●	●	▲	—		—
	L Low Resistance E With Honing	**2NC-DNGA 150404LE**	1	2	0.4	2.4	—	—	—	—	●	—	—	—	—	—
		150408LE			0.8	2.0	—	—	—	—	●	—	—	—	—	—
		150412LE			1.2	1.9	—	—	—	—	●	—	—	—	—	—
	L Low Resistance T Negative Land	**2NC-DNGA 150402LT**	1	2	0.2	2.5	—	—	—	—	—	●	—	—	—	—
		150404LT			0.4	2.4	—	—	—	—	—	●	—	—	—	—
		150408LT			0.8	2.0	—	—	—	—	—	●	—	—	—	—
		150412LT			1.2	1.9	—	—	—	—	—	●	—	—	—	—
	L Low Resistance S Negative Land With Honing	**2NC-DNGA 150402LS**	1	2	0.2	2.5			●		—	—			—	—
		150404LS			0.4	2.4	●	●	●	●	—	—		●	—	—
		150408LS			0.8	2.0	●	●	●	●	—	—		●	—	—
		150412LS			1.2	1.9	●	●	●	●	—	—		●	—	—

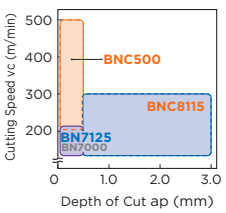
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

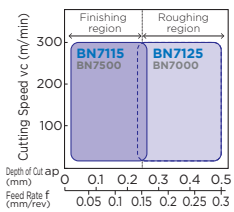
K Grey Cast Iron



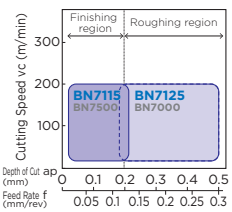
K Ductile Cast Iron



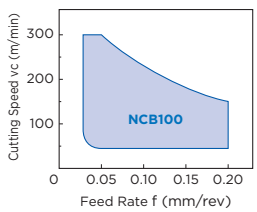
General Sintered Alloy



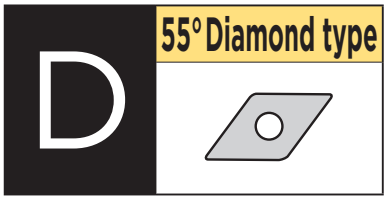
High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

DNG■1504●● Coated

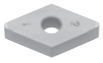
Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ⊗ 2nd Recommendation

Recommended Application	Coated SUMIBORON									
	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K Cast Iron									●	✖
S Exotic Alloy										
H Hardened Steel	○	●	◕	✖	○	◔				
Sintered Components										

Applicable External Holders C14 to C16
Applicable Boring Bars E15, E31 to E33

Multi-Cornered One-Use type / Negative (With Hole)

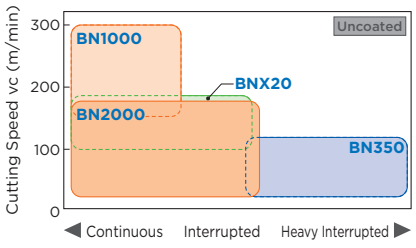
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	L Low Resistance S Negative Land With Honing	4NC-DNGA 150404LS	1	4	0.4	2.4	—	—	—		—	—	▲		—	—
		150408LS			0.8	2.0	—	—	—		—	—	▲		—	—
		150412LS			1.2	1.9	—	—	—		—	—	▲		—	—
	H Strong Edge S Negative Land With Honing	4NC-DNGA 150404HS	1	4	0.4	2.4		●	●	●	●	●	▲	●	●	—
		150408HS			0.8	2.0		●	●	●	●	●	▲	●	●	—
		150412HS			1.2	1.9		●	●	●	●	●	▲	●	●	—
	E High Efficiency S Negative Land With Honing	4NC-DNGA 150404ES	1	4	0.4	2.4						●	—	—	—	—
		150408ES			0.8	2.0						●	—	—	—	—
		150412ES			1.2	1.9						●	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

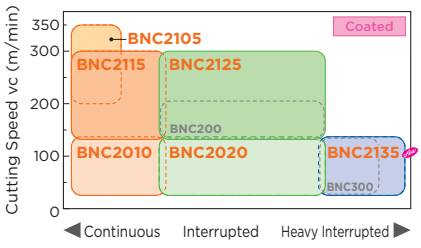
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

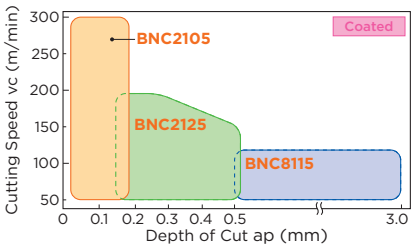
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



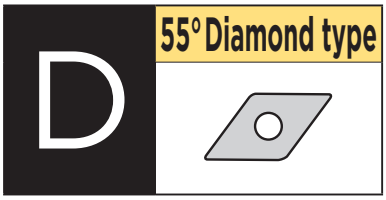
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



DNMA1506 ●● Uncoated

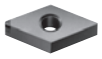
Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	6.35		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	K Cast Iron						○	◕				✱	
	S Exotic Alloy							●				◕	●
	H Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			
					Uncoated SUMIBORON							BINDERLESS SUMIBORON	

Applicable External Holders C14, C16 | Applicable Boring Bars E32

One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-DNMA 150604**	1	1	0.4	2.4				●							—	—
		150608			0.8	2.0				●							—	—
		150612			1.2	1.9				●							—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

DNGA1506 ●● Coated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	6.35		

Recommended Application		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	K Cast Iron									●	✱
	S Exotic Alloy										
	H Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										
						Coated SUMIBORON					

Applicable External Holders C14, C16 | Applicable Boring Bars E32

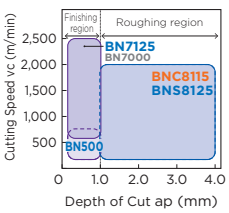
Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**4NC-DNGA 150604**	1	4	0.4	2.4					●	●				—
		150608			0.8	2.0					●	●				—
		150612			1.2	1.9					●	●				—

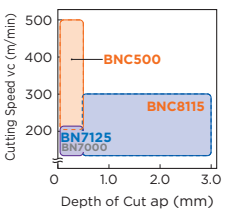
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

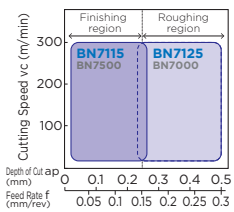
K Grey Cast Iron



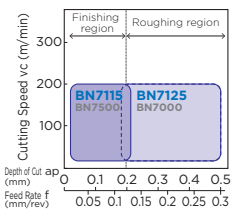
K Ductile Cast Iron



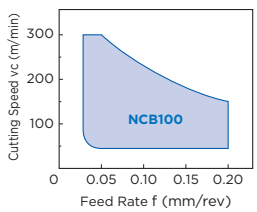
General Sintered Alloy

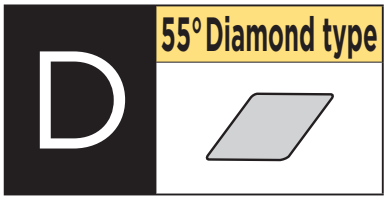


High-density Sintered Alloy



S Titanium Alloy





Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

DNGN1103●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders L125

Recommended Application		BINDERLESS SUMIBORON
K	Cast Iron	○ ● ✖ ✖
S	Exotic Alloy	● ● ●
H	Hardened Steel	○ ◔ ● ● ✖
	Sintered Components	● ●

Uncoated SUMIBORON

Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**DNGN 110308**	1	4	0.8	10.8	—	—	—	—	—	—	—	—	—	—	●	—
		110312			1.2	10.5	—	—	—	—	—	—	—	—	—	—	●	—
	L Low Resistance F Sharp Edge	**DNGN 110308LF**	1	4	0.8	10.8	—	—	—	—	—	—	—	—	—	—		—
		110312LF			1.2	10.5	—	—	—	—	—	—	—	—	—	—		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

DNGN1103●● Coated

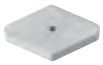
Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders L125

Recommended Application		
K	Cast Iron	● ✖
S	Exotic Alloy	
H	Hardened Steel	○ ● ● ✖ ○ ◔
	Sintered Components	

Coated SUMIBORON

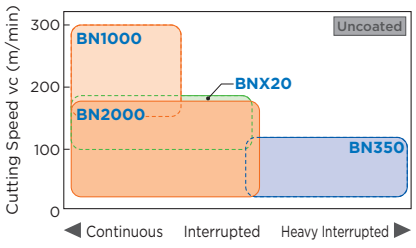
Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**DNGN 110308**	1	4	0.8	10.8	—	—	—	—	—	—	—	—	—	●
		110312			1.2	10.5	—	—	—	—	—	—	—	—	—	●

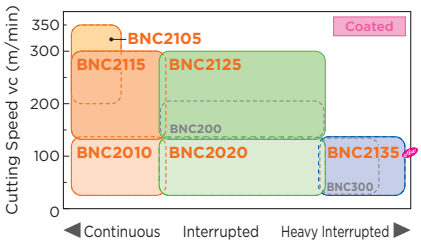
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

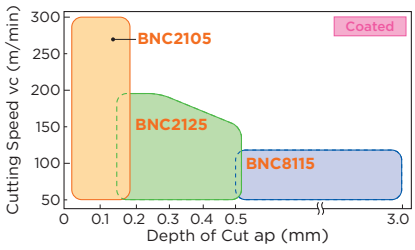
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



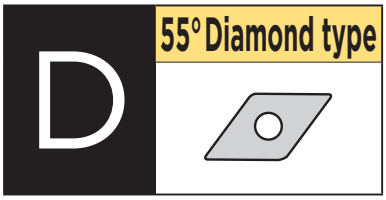
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



SUMIBORON Inserts



DCG■0702●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	2.38		

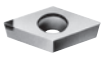
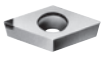
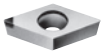
(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Applicable External Holders ☞ C17, D27, D28, D32, D33, D39

Applicable Boring Bars ☞ E16, E26 to E30

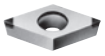
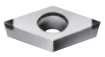
One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-DCGW 070202**	1	1	0.2	2.6			●	●							—	
		070204			0.4	2.4			●	●				▲			—	●
		070208			0.8	2.0				●							—	
		T-NU-DCGW 070202	10	1	0.2	2.6				●							—	—
		070204			0.4	2.4				●							—	—
		070208			0.8	2.0											—	—
	L Low Resistance T Negative Land	**NU-DCGW 070202LT**	1	1	0.2	2.6	—		—	●	—	—	—	—	—	—	—	—
		070204LT			0.4	2.4	—		—	●	—	—	—	—	—	—	—	—
		070208LT			0.8	2.0	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-DCGW 070202HS**	1	1	0.2	2.6	—	—	—	●	—	—					—	—
		070204HS			0.4	2.4	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

*Depth of cut for one-use types is 0.5mm or less.

Multi-Cornered One-Use type / 7° Positive (With Hole)

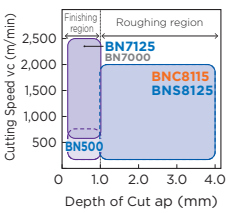
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**2NU-DCGW 070202**	1	2	0.2	2.6							●				—	
		070204			0.4	2.4							●	▲	●	▲	—	
		070208			0.8	2.0							●	▲	●	▲	—	
	Finishing Chipbreaker	**2NU-DCGT 070204N-FV**	1	2	0.4	2.4	—	—		●	—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

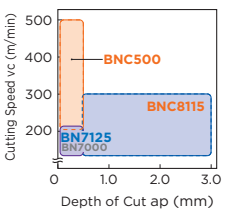
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

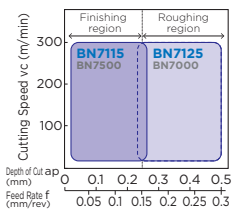
K Grey Cast Iron



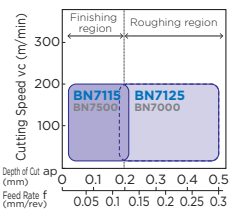
K Ductile Cast Iron



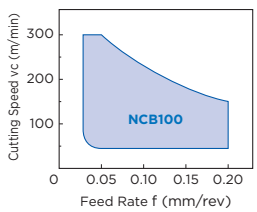
General Sintered Alloy



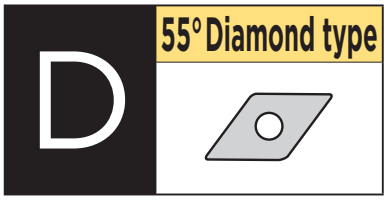
High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✱ 2nd Recommendation

Recommended Application		Coated SUMIBORON
K	Cast Iron	● ✖
S	Exotic Alloy	
H	Hardened Steel	○ ● ◔ ✖ ○ ◔
	Sintered Components	

DCG■0702●● Coated

Dimensions (mm)				
	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	2.38		

Applicable External Holders ☞C17, D27, D28, D32, D33, D39
Applicable Boring Bars ☞E16, E26 to E30

Multi-Cornered One-Use type / 7° Positive (With Hole)

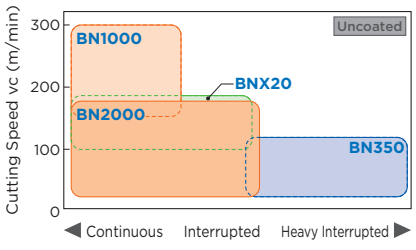
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**2NC-DCGW 070202**	1	2	0.2	2.6	●	●	●		●	●	▲			—
		070204			0.4	2.4	●	●	●	●	●	●	▲		●	—
		070208			0.8	2.0		●	●	●	●	●				—
	Finishing Chipbreaker	**2NC-DCGT 070204N-FV**	1	2	0.4	2.4		●	●	—	●	●	▲	—		—
	L Low Resistance T Negative Land	**2NC-DCGW 070202LT**	1	2	0.2	2.6	—	—	—	—	—	●	—	—	—	—
		070204LT			0.4	2.4	—	—	—	—	—	●	—	—	—	—
	L Low Resistance S Negative Land With Honing	**2NC-DCGW 070202LS**	1	2	0.2	2.6		●	●		—	—	▲		—	—
		070204LS			0.4	2.4		●	●		—	—	▲		—	—
		070208LS			0.8	2.0		●	●		—	—			—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

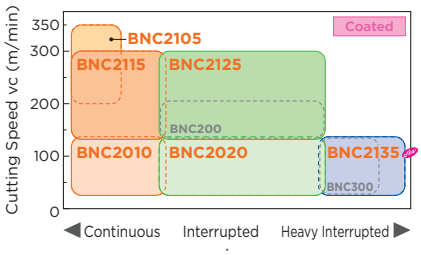
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

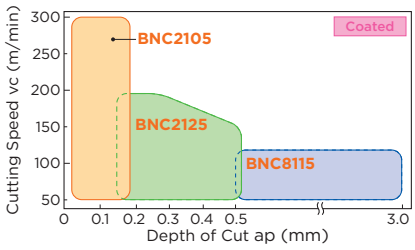
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



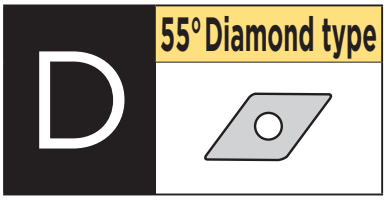
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



DCG■11T3●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

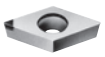
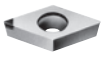
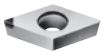
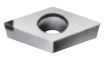
(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	○ ◕ ✱ ✲
S	Exotic Alloy	◕ ● ◕ ●
H	Hardened Steel	○ ◔ ● ◕ ✱
	Sintered Components	◕ ●

Applicable External Holders ☞ C17, D32, D33, D39

Applicable Boring Bars ☞ E13, E26 to E30

One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON: BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	BINDERLESS SUMIBORON: NCB100
	Standard	**NU-DCGW 11T302**	1	1	0.2	2.6			●	●				▲			—	
		11T304			0.4	2.4			●	●				▲			—	●
		11T308			0.8	2.0				●							—	●
		11T312			1.2	2.0				●							—	
		T-NU-DCGW 11T302	10	1	0.2	2.6				●							—	—
		11T304			0.4	2.4				●							—	—
		11T308			0.8	2.0											—	—
		11T312			1.2	2.0											—	—
	L Low Resistance F Sharp Edge	**NU-DCGW 11T302LF**	1	1	0.2	2.6	—	—	—	—	—	—		▲			—	—
		11T304LF			0.4	2.4	—	—	—	—	—	—		▲			—	—
		11T308LF			0.8	2.0	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**NU-DCGW 11T302LT**	1	1	0.2	2.6	—		—	●	—	—	—	—	—	—	—	—
		11T304LT			0.4	2.4	—		—	●	—	—	—	—	—	—	—	—
		11T308LT			0.8	2.0	—		—	●	—	—	—	—	—	—	—	—
		11T312LT			1.2	2.0	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-DCGW 11T302HS**	1	1	0.2	2.6	—	—	—	●	—	—					—	—
		11T304HS			0.4	2.4	—	—	—	●	—	—					—	—
		11T308HS			0.8	2.0	—	—	—	●	—	—					—	—

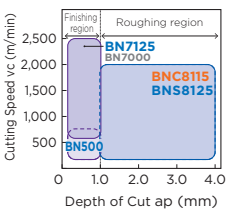
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

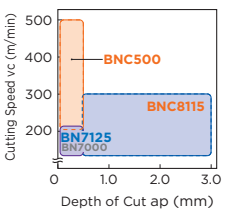
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

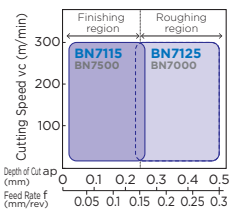
K Grey Cast Iron



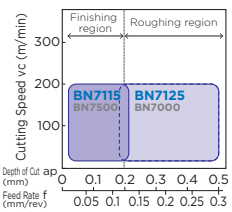
K Ductile Cast Iron



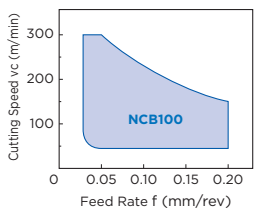
General Sintered Alloy



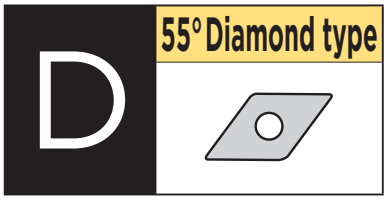
High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

DCG■11T3●● Uncoated

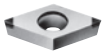
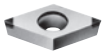
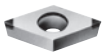
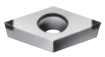
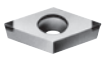
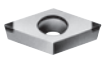
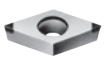
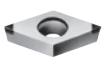
Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ○ 2nd Recommendation; Interrupted Cutting: ✱ 1st Recommendation ✱ 2nd Recommendation

Recommended Application		BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	K Cast Iron	●				✱	
	S Exotic Alloy	●				●	●
	H Hardened Steel	✱					
	Sintered Components	●		●			

Applicable External Holders C17, D27, D28, D32, D33, D39 | Applicable Boring Bars E13, E26 to E30

Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
							Uncoated SUMIBORON											BINDERLESS SUMIBORON
	Standard	**2NU-DCGW 11T302**	1	2	0.2	2.6							●	▲	●	▲	—	
		11T304			0.4	2.4							●	▲	●	▲	—	
		11T308			0.8	2.0							●	▲	●	▲	—	
		T-2NU-DCGW 11T302	10	2	0.2	2.6											—	—
		11T304			0.4	2.4									●	▲	—	—
		11T308			0.8	2.0											—	—
	Low Feed Wiper Insert	**2NU-DCGW 11T304WG***	1	2	0.4	2.3				●							—	
		11T308WG*			0.8	2.0				●							—	
	High Feed Wiper Insert	**2NU-DCGW 11T304WH***	1	2	0.4	2.1				●							—	
		11T308WH*			0.8	1.8				●							—	
	Finishing Chipbreaker	**2NU-DCGT 11T304N-FV**	1	2	0.4	2.4	—	—		●	—	—	—	—	—	—	—	—
		11T308N-FV			0.8	2.0	—	—		●	—	—	—	—	—	—	—	—
	Light Cutting Chipbreaker	**2NU-DCGT 11T304N-LV**	1	2	0.4	2.4	—	—		●	—	—	—	—	—	—	—	—
		11T308N-LV			0.8	2.0	—	—		●	—	—	—	—	—	—	—	—
	L Low Resistance F Sharp Edge	**2NU-DCGW 11T302LF**	1	2	0.2	2.6	—	—	—	—	—	—	●	▲	●	▲	—	—
		11T304LF			0.4	2.4	—	—	—	—	—	—	●	▲	●	▲	—	—
		11T308LF			0.8	2.0	—	—	—	—	—	—	●	▲	●	▲	—	—
	L Low Resistance E With Honing	**2NU-DCGW 11T302LE**	1	2	0.2	2.6	—	—	—	—	—	—	●	—	●	▲	—	—
		11T304LE			0.4	2.4	—	—	—	—	—	—	●	—	●	▲	—	—
		11T308LE			0.8	2.0	—	—	—	—	—	—	●	—	●	▲	—	—
	L Low Resistance S Negative Land With Honing	**2NU-DCGW 11T302LS**	1	2	0.2	2.6	—	—	—	—	—	—	—	—	●	▲	—	—
		11T304LS			0.4	2.4	—	—	—	—	—	—	—	—	●	▲	—	—
		11T308LS			0.8	2.0	—	—	—	—	—	—	—	—	●	▲	—	—

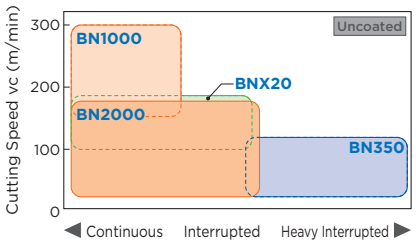
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

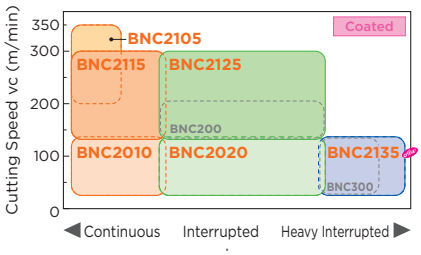
*Depth of cut for one-use types is 0.5mm or less.
*Use a holder with a cutting edge angle of 93°.

SUMIBORON Application Range Map

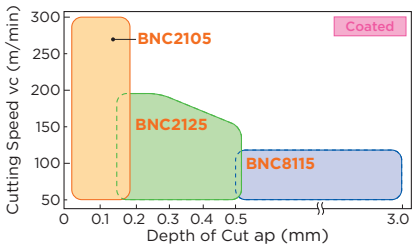
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

D 55° Diamond type

DCG■11T3●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Applicable External Holders C17, D27, D28, D32, D33, D39

Applicable Boring Bars E13, E26 to E30

Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**2NC-DCGW 11T302**	1	2	0.2	2.6		●	●		●	●	▲		●	—
		11T304			0.4	2.4	●	●	●	●	●	●	▲	●	●	—
		11T308			0.8	2.0	●	●	●	●	●	●	▲	●	●	—
		11T312 New			1.2	1.9		●	●							—
	Low Feed Wiper Insert	**2NC-DCGW 11T304WG***	1	2	0.4	2.3		●	●		●	●	▲			—
		11T308WG*			0.8	2.0		●	●		●	●	▲			—
	High Feed Wiper Insert	**2NC-DCGW 11T304WH***	1	2	0.4	2.0		●	●		●	●	▲			—
		11T308WH*			0.8	1.8		●	●		●	●	▲			—
	Finishing Chipbreaker	**2NC-DCGT 11T304N-FV**	1	2	0.4	2.4		●	●	—	●	●	▲	—		—
		11T308N-FV			0.8	2.0		●	●	—	●	●	▲	—		—
	Light Cutting Chipbreaker	**2NC-DCGT 11T304N-LV**	1	2	0.4	2.4		●	●	—	●	●	▲	—		—
		11T308N-LV			0.8	2.0		●	●	—	●	●	▲	—		—

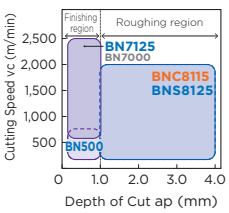
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

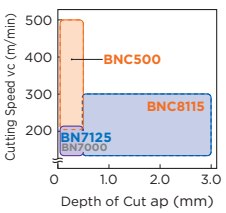
*Use a holder with a cutting edge angle of 93° .

SUMIBORON Application Range Map

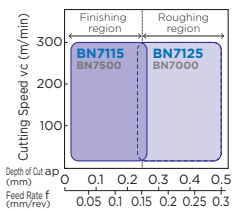
K Grey Cast Iron



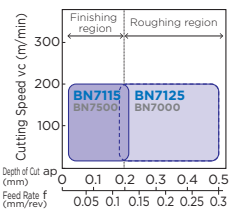
K Ductile Cast Iron



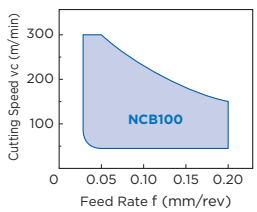
Sintered Alloy General Sintered Alloy



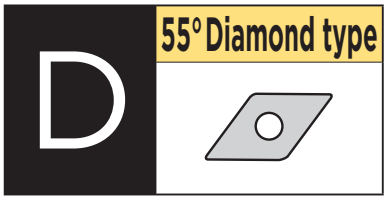
Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✱ 2nd Recommendation

Recommended Application	Coated SUMIBORON									
	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K Cast Iron									●	✖
S Exotic Alloy										
H Hardened Steel	○	●	◔	✖	○	◔				
Sintered Components										

DCG■11T3●● Coated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.97		

Applicable External Holders ☞C17, D27, D28, D32, D33, D39 Applicable Boring Bars E13, E26 to E30

Multi-Cornered One-Use type / 7° Positive (With Hole)

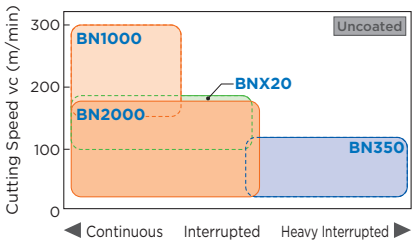
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	L Low Resistance E With Honing	**2NC-DCGW 11T302LE**	1	2	0.2	2.6	—	—	—	—	●	—	—	—	—	—
		11T304LE			0.4	2.4	—	—	—	—	●	—	—	—	—	—
		11T308LE			0.8	2.0	—	—	—	—	●	—	—	—	—	—
	L Low Resistance T Negative Land	**2NC-DCGW 11T302LT**	1	2	0.2	2.6	—	—	—	—	—	●	—	—	—	—
		11T304LT			0.4	2.4	—	—	—	—	—	●	—	—	—	—
		11T308LT			0.8	2.0	—	—	—	—	—	●	—	—	—	—
	L Low Resistance S Negative Land With Honing	**2NC-DCGW 11T302LS**	1	2	0.2	2.6		●	●		—	—	▲		—	—
		11T304LS			0.4	2.4	●	●	●	●	—	—	▲	●	—	—
		11T308LS			0.8	2.0	●	●	●	●	—	—	▲	●	—	—
		11T312LS New			1.2	1.9		●	●		—	—				—
	H Strong Edge S Negative Land With Honing	**2NC-DCGW 11T304HS**	1	2	0.4	2.4				●				●		—
		11T308HS			0.8	2.0				●				●		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

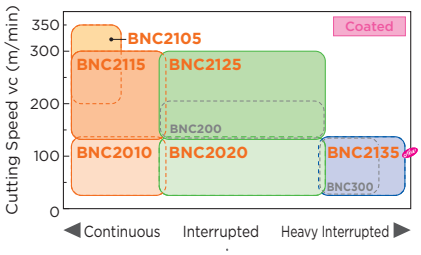
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

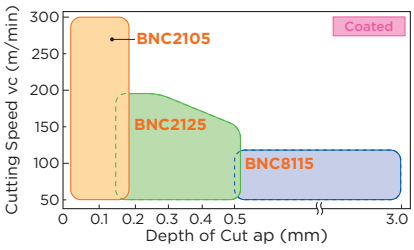
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

R Round type

RNGN●●●●●●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525 to 12.7	Hole Dia.	-
	Thickness	3.18 to 4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON											BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

Applicable External Holders ☞L126

Negative type (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Full-top CBN (Standard)	**RNGN 120400-B**	1	—	12.7							●	●			—	—
	Full-top CBN (Standard)	**RNGN 150400-B**	1	—	15.88											—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33

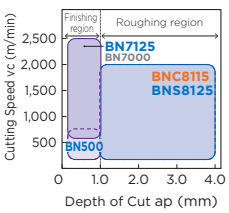
Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**RNGN 090300**	1	—	9.5	—	—	—	—	—	—	—	—	—	—	●	—
	L Low Resistance F Sharp Edge	**RNGN 090300LF**	1	—	9.5	—	—	—	—	—	—	—	—	—	—		—
	Standard	**RNGN 120300**	1	—	12.7	—	—	—	—	—	—	—	—	—	—	●	—
	L Low Resistance F Sharp Edge	**RNGN 120300LF**	1	—	12.7	—	—	—	—	—	—	—	—	—	—		—

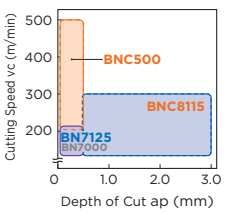
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

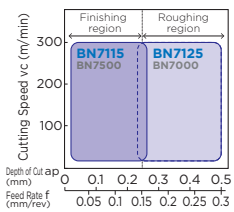
K Grey Cast Iron



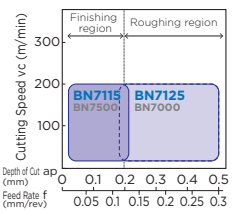
K Ductile Cast Iron



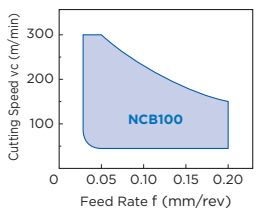
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



R Round type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application												
K	Cast Iron						○	●				●
S	Exotic Alloy							●				●	●
H	Hardened Steel	○	◔	●	●	●							
	Sintered Components							●		●			

RNGN●●●●●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525 to 12.7	Hole Dia.	-
	Thickness	3.18 to 4.76		

Applicable External Holders L126

Uncoated SUMIBORON

BINDERLESS SUMIBORON

Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**RNGN 120400**	1	—	12.7	—	—	—	—	—	—	—	—	—	—	●	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

Recommended Application												
K	Cast Iron									●	●	
S	Exotic Alloy											
H	Hardened Steel	○	●	●	●	○	◔					
	Sintered Components											

RNGN●●●●●● Coated

Dimensions (mm)				
	Inscribed Circle	9.525 to 12.7	Hole Dia.	-
	Thickness	3.18 to 4.76		

Applicable External Holders L126

Coated SUMIBORON

Solid type / Negative (Without Hole)

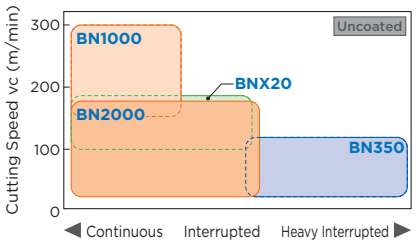
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**RNGN 090300**	1	—	9.5	—	—	—	—	—	—	—	—	—	●
	Standard	**RNGN 120300**	1	—	12.7	—	—	—	—	—	—	—	—	—	●
	Standard	**RNGN 120400**	1	—	12.7	—	—	—	—	—	—	—	—	—	●

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

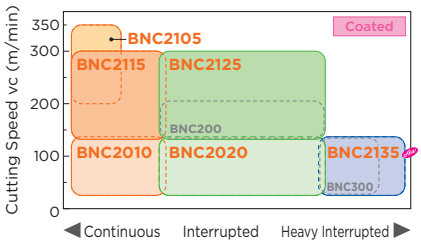
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

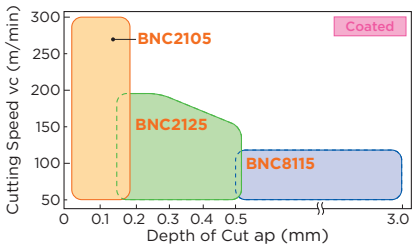
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel

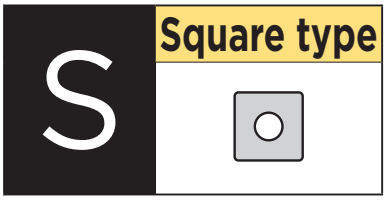


H Bearing Steel (SUJ2, etc.)



SUMIBORON Inserts

S Square type



SN■A1204●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✱ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Applicable External Holders C20 to C26 | Applicable Boring Bars E37 to E39

One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-SNMA 120404**	1	1	0.4	2.5				●		●		▲			—	—
		120408			0.8	2.5		●	●	●	●	●		▲			—	—
		120412			1.2	2.5		●	●	●	●	●		▲			—	—
	Standard	**T-NU-SNMA 120404**	10	1	0.4	2.5				●							—	—
		120408			0.8	2.5		●		●		●					—	—
		120412			1.2	2.5		●		●	●						—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

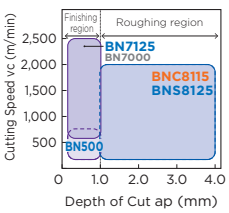
Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**2NU-SNGA 120404**	1	2	0.4	2.5		●		●			●	▲			—	
		120408			0.8	2.5		●	●	●			●	▲			—	
		120412			1.2	2.5		●	●	●			●	▲			—	
	Standard	**T-2NU-SNGA 120404**	10	2	0.4	2.5		●		●							—	—
		120408			0.8	2.5		●		●							—	—
		120412			1.2	2.5		●		●							—	—
	L Low Resistance T Negative Land	**2NU-SNGA 120404LT**	1	2	0.4	2.5	—		—	●	—	—	—	—	—	—	—	—
		120408LT			0.8	2.5	—		—	●	—	—	—	—	—	—	—	—
		120412LT			1.2	2.5	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**2NU-SNGA 120404HS**	1	2	0.4	2.5	—	—	—	●	—	—					—	—
		120408HS			0.8	2.5	—	—	—	●	—	—					—	—
		120412HS			1.2	2.5	—	—	—	●	—	—					—	—

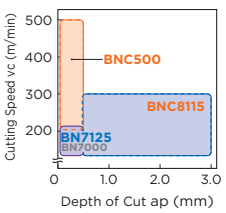
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

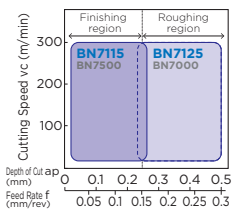
K Grey Cast Iron



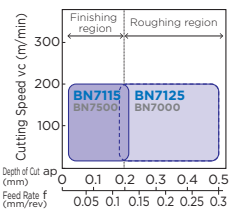
K Ductile Cast Iron



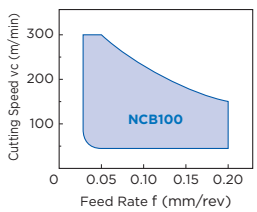
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

S Square type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

SN■A1204●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ◌ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◔				✖	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◔	✖							
	Sintered Components							◔		●			

Applicable External Holders C20 to C26 | Applicable Boring Bars ☞ E37 to E39

Negative type (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNMA 120404**	1	1	0.4	4.9											—	—
		120408			0.8	4.9		●		●				▲			—	—
		120412			1.2	4.9		●		●				▲			—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

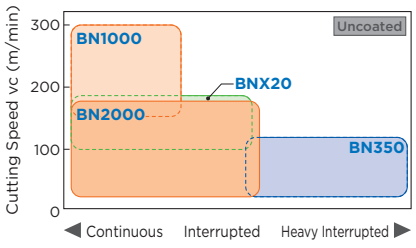
Solid type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNGA 120408**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	—	●	—
		120412			1.2	12.7	—	—	—	—	—	—	—	—	—	—	●	—

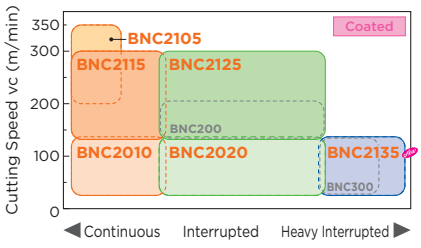
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

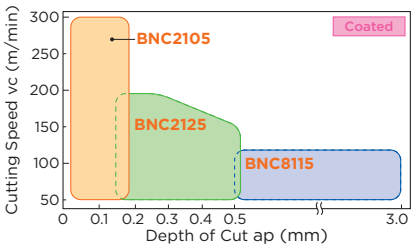
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

S Square type

SNGA1204●● Coated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	● ✱
S	Exotic Alloy	
H	Hardened Steel	○ ● ◕ ✱ ○ ◔
	Sintered Components	

Applicable External Holders C20 to C26 | Applicable Boring Bars E37 to E39

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON								
							BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**2NC-SNGA 120408**	1	2	0.8	2.4									●	—
		120412			1.2	2.4									●	—
	Standard	**4NC-SNGA 120404**	1	4	0.4	2.4		●	●		●	●				—
		120408			0.8	2.4		●	●		●	●				—
		120412			1.2	2.4		●	●		●	●				—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

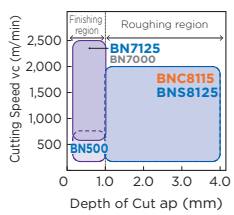
Solid Insert / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON								
							BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**SNGA 120408**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	●
		120412			1.2	12.7	—	—	—	—	—	—	—	—	—	●

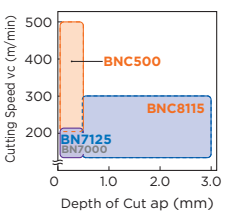
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

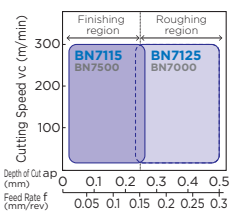
K Grey Cast Iron



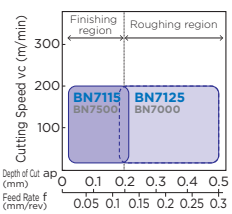
K Ductile Cast Iron



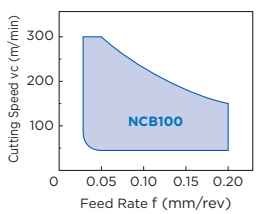
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



SUMIBORON Inserts

S Square type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON	
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✖	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✖							
	Sintered Components							◕		●			

SN■N0903●● Uncoated				
Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders ☞ L124

Negative type (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Full-top CBN (Standard)	**SNGN 090308-B**	1	4	0.8	9.5							●	▲			—	—
		090312-B			1.2	9.5											—	—
		090316-B			1.6	9.5											—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

Solid type / Negative (Without Hole)

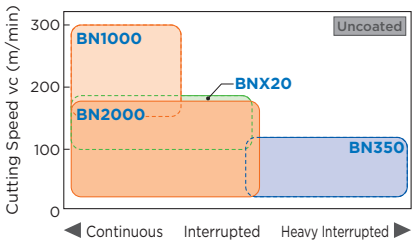
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNGN 090308**	1	8	0.8	9.5	—	—	—	—	—	—	—	—	—	—	●	—
		090312			1.2	9.5	—	—	—	—	—	—	—	—	—	—	●	—
	L Low Resistance F Sharp Edge	**SNGN 090308LF**	1	8	0.8	9.5	—	—	—	—	—	—	—	—	—	—		—
		090312LF			1.2	9.5	—	—	—	—	—	—	—	—	—	—		—
	Wiper Insert	**SNEN 090308W**	1	8	0.8	9.5	—	—	—	—	—	—	—	—	—	—	●	—
	L Low Resistance F Sharp Edge Wiper Insert	**SNEN 090308LFW**	1	8	0.8	9.5	—	—	—	—	—	—	—	—	—	—		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

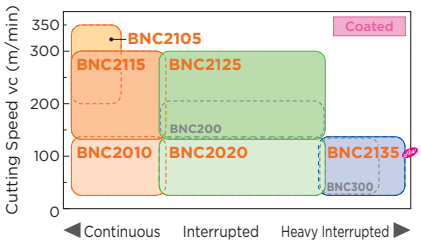
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

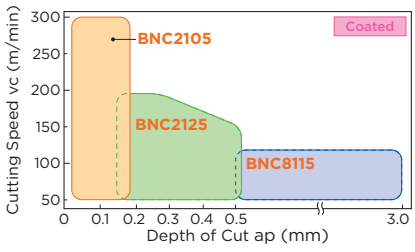
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

S Square type

SN■N0903●● Coated

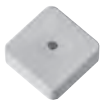
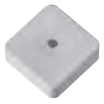
Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders L124

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

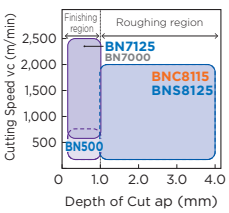
Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**SNGN 090308**	1	8	0.8	9.5	—	—	—	—	—	—	—	—	—	●
		090312			1.2	9.5	—	—	—	—	—	—	—	—	—	●
	Wiper Insert	**SNEN 090308W**	1	8	0.8	9.5	—	—	—	—	—	—	—	—	—	●

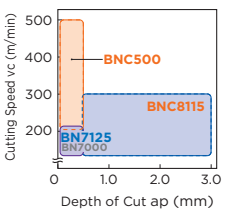
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

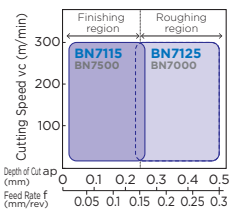
K Grey Cast Iron



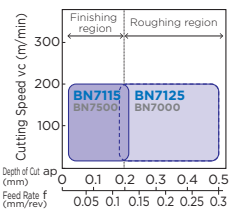
K Ductile Cast Iron



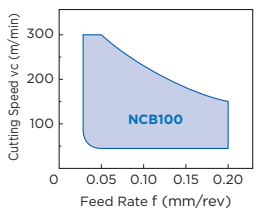
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



SUMIBORON Inserts

S Square type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✖	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✖							
	Sintered Components							◕		●			

SNGN1203●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders ☞ L124

Solid type / Negative (Without Hole)

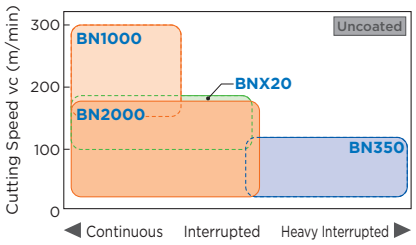
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNGN 120308**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	—	●	—
		120312			1.2	12.7	—	—	—	—	—	—	—	—	—	—	●	—
	L Low Resistance F Sharp Edge	**SNGN 120308LF**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	—		—
		120312LF			1.2	12.7	—	—	—	—	—	—	—	—	—	—		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

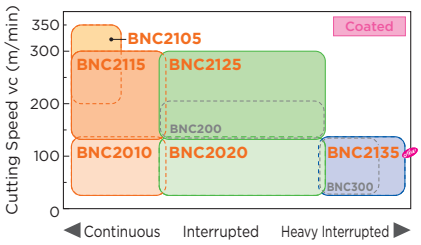
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

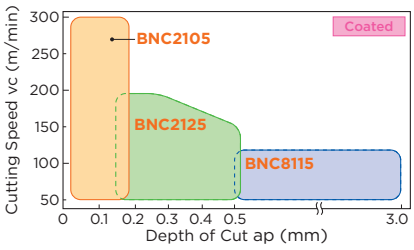
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



S Square type

SNGN1203 Coated

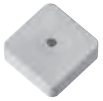
Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	3.18		

(Legend) Continuous Cutting: 1st Recommendation, 2nd Recommendation; General Machining: 1st Recommendation, 2nd Recommendation; Interrupted Cutting: 1st Recommendation, 2nd Recommendation

Recommended Application		Coated SUMIBORON								
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✱
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										

Applicable External Holders L124

Solid type / Negative (Without Hole)

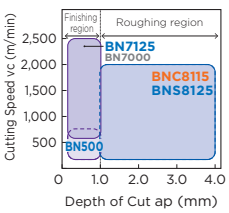
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**SNGN 120308**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	●
		120312			1.2	12.7	—	—	—	—	—	—	—	—	—	●

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

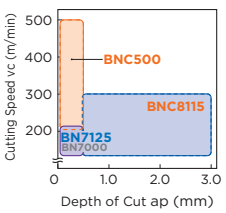
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

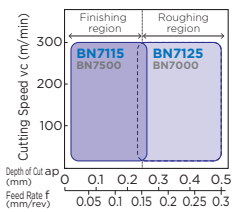
K Grey Cast Iron



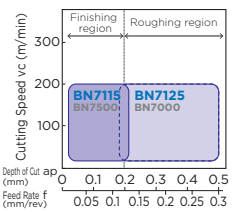
K Ductile Cast Iron



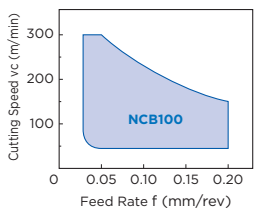
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



S Square type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	●				✱	
S	Exotic Alloy							●				●	●
H	Hardened Steel	○	◔	●	●	✱							
	Sintered Components							●		●			

SNG■1204●● Uncoated

Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders ☞ L124

Negative type (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNGN 120408**	1	1	0.8	4.8		●		●		●					—	—
		120412			1.2	4.8		●		●							—	—
	Full-top CBN (Standard)	**SNGN 120408-B**	1	4	0.8	12.7	—		—	—			—		—	—	—	—
		120412-B			1.2	12.7	—		—	—			—		—	—	—	—
		120416-B			1.6	12.7	—		—	—			—		—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

Solid type / Negative (Dimple Lock)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNGX 120408**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	—	●	—
		120412			1.2	12.7	—	—	—	—	—	—	—	—	—	—	●	—
		120416			1.6	12.7	—	—	—	—	—	—	—	—	—	—	●	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

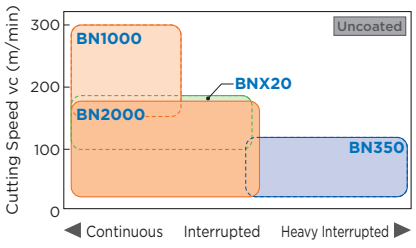
Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SNGN 120408**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	—	●	—
		120412			1.2	12.7	—	—	—	—	—	—	—	—	—	—	●	—
		120416			1.6	12.7	—	—	—	—	—	—	—	—	—	—	●	—
		120420			2.0	12.7	—	—	—	—	—	—	—	—	—	—	●	—

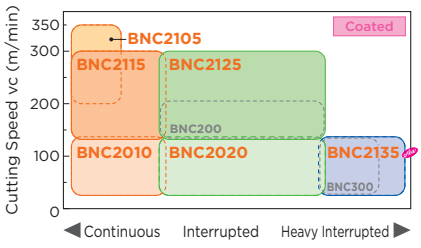
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

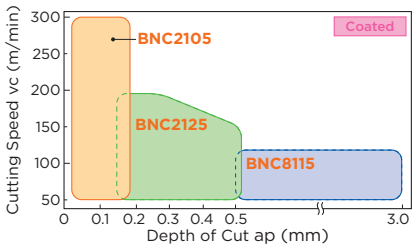
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



S Square type

SNG■1204●● Coated

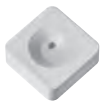
Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	● ✱
S	Exotic Alloy	
H	Hardened Steel	○ ● ◕ ✱ ○ ◔
	Sintered Components	

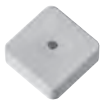
Applicable External Holders L124

Solid type / Negative (Dimple Lock)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**SNGX 120408**	1	8	0.8	12.7	—	—	—	—	—	—	—	—	—	●
		120412			1.2	12.7	—	—	—	—	—	—	—	—	—	●
		120416			1.6	12.7	—	—	—	—	—	—	—	—	—	●

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

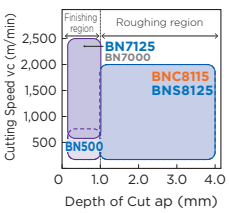
Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**SNGN 120408**	1	8	0.8	4.8	—	—	—	—	—	—	—	—	—	●
		120412			1.2	4.8	—	—	—	—	—	—	—	—	—	●
		120416			1.6	12.7	—	—	—	—	—	—	—	—	—	●
		120420			2.0	12.7	—	—	—	—	—	—	—	—	—	●

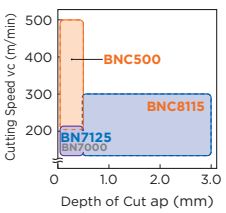
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

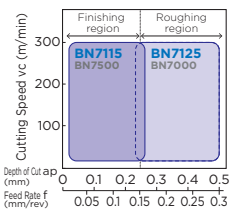
K Grey Cast Iron



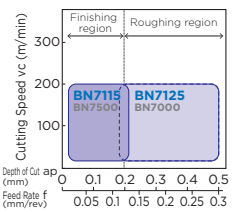
K Ductile Cast Iron



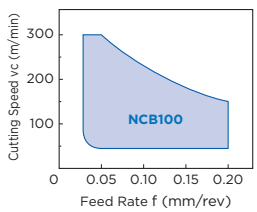
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



SUMIBORON Inserts

S Square type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation, 2nd Recommendation; General Machining: 1st Recommendation, 2nd Recommendation; Interrupted Cutting: 1st Recommendation, 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✖	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✖							
	Sintered Components							◕		●			

SPGN0903●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

Applicable Boring Bars ☞E35

One-Use type / 11° Positive (Without Hole)

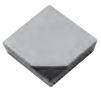
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-SPGN 090304**	1	1	0.4	2.3		●		●				▲			—	
		090308			0.8	2.3		●		●		●		▲			—	
		T-NU-SPGN 090304	10	1	0.4	2.3		●		●							—	—
		090308			0.8	2.3		●		●							—	—
	L Low Resistance T Negative Land	**NU-SPGN 090304LT**	1	1	0.4	2.3	—		—	●	—	—	—	—	—	—	—	—
		090308LT			0.8	2.3	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-SPGN 090304HS**	1	1	0.4	2.3	—	—	—	●	—	—					—	—
		090308HS			0.8	2.3	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞L32, L33

*Depth of cut for one-use types is 0.5mm or less.

11° Positive type (Without Hole)

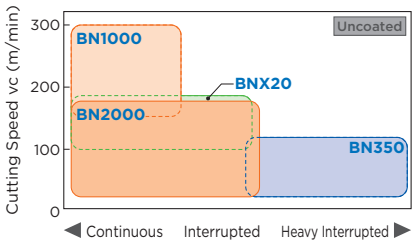
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**SPGN 090304**	1	1	0.4	4.8								▲			—	
		090308			0.8	4.8								▲			—	—
		090312			1.2	4.8											—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

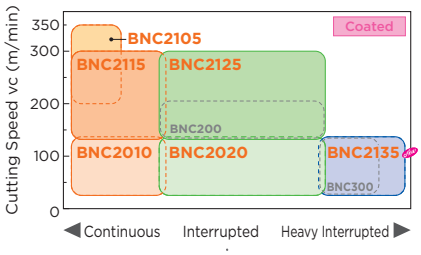
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

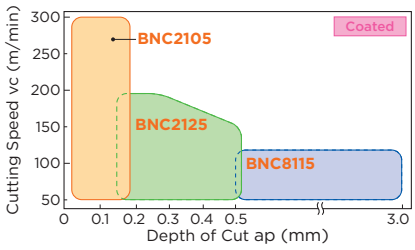
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

S Square type

SPGN1203 Uncoated

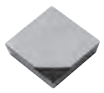
Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	3.18		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON											BINDERLESS SUMIBORON	
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

Applicable External Holders C27, C28

11° Positive type (Without Hole)

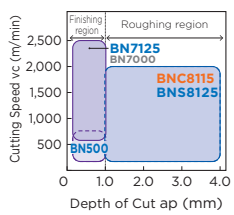
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length
	Standard	**SPGN 120308**	1	1	0.8	4.8
		120312			1.2	4.8

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

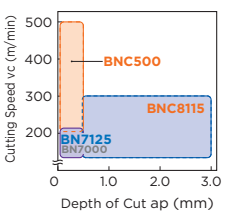
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

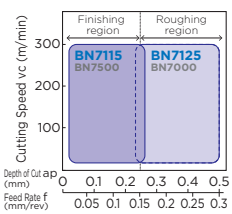
K Grey Cast Iron



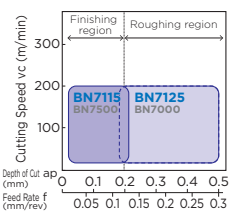
K Ductile Cast Iron



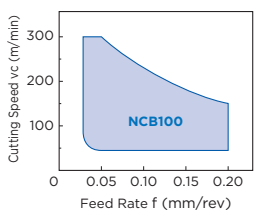
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



T Triangular type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

TN■■1604●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✱ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◔				✖	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◔	✖							
	Sintered Components							◔		●			

Applicable External Holders C29 to C35, D29, D41 | Applicable Boring Bars E15, E45 to E47

One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-TNMA 160401**	1	1	0.1	2.5				●							—	—
		160402			0.2	2.3				●							—	—
		160404			0.4	2.2	▲	●	●	●	●	●		▲			—	—
		160408			0.8	1.9	▲	●	●	●	●	●		▲			—	—
		160412			1.2	1.9		●		●		●		▲			—	—
		T-NU-TNMA 160401	10	1	0.1	2.5											—	—
		160402			0.2	2.3											—	—
		160404			0.4	2.2	▲	●	●	●	●	●					—	—
		160408			0.8	1.9	▲	●	●	●	●	●					—	—
		160412			1.2	1.9		●									—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details L32, L33

Multi-Cornered One-Use type / Negative (With Hole)

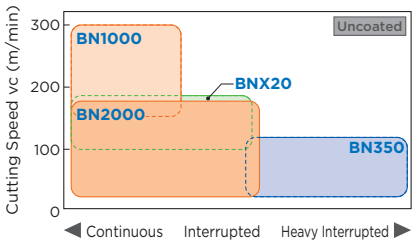
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**3NU-TNGA 160404**	1	3	0.4	2.2		●	●	●	●		●	▲	●	▲	—	
		160408			0.8	1.9		●	●	●	●		●	▲	●	▲	—	
		160412			1.2	1.9		●		●	●		●	▲	●	▲	—	
		T-3NU-TNGA 160404	10	3	0.4	2.2		●		●			●	▲	●	▲	—	—
		160408			0.8	1.9		●		●	●		●	▲			—	—
		160412			1.2	1.9		●		●							—	—
	Light Cutting Chipbreaker	**3NU-TNGM 160404N-LV**	1	3	0.4	2.2	—	—		●	—	—	—	—	—	—	—	—
		160408N-LV			0.8	1.9	—	—		●	—	—	—	—	—	—	—	—
		160412N-LV			1.2	1.9	—	—		●	—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

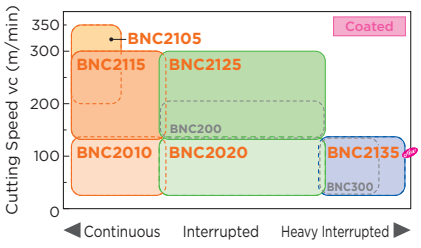
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

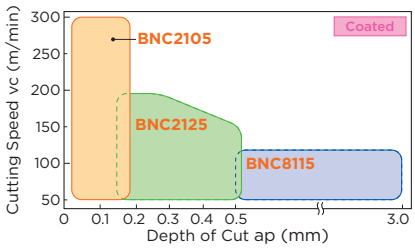
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

TN■■1604●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	○ ◕ ✱ ✲
S	Exotic Alloy	● ◕ ◔
H	Hardened Steel	○ ◔ ● ◕ ✱
	Sintered Components	◕ ●

Applicable External Holders C29 to C35, D29, D41

Applicable Boring Bars E15, E45 to E47

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON: BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	BINDERLESS SUMIBORON: NCB100
	L Low Resistance F Sharp Edge	3NU-TNGA 160404LF	1	3	0.4	2.2	—	—	—	—	—	—	●	▲	●	▲	—	—
		160408LF			0.8	1.9	—	—	—	—	—	—	●	▲	●	▲	—	—
		160412LF			1.2	1.9	—	—	—	—	—	—					—	—
	L Low Resistance E With Honing	3NU-TNGA 160404LE	1	3	0.4	2.2	—	—	—	—	—	—	●	—	●	▲	—	—
		160408LE			0.8	1.9	—	—	—	—	—	—	●	—	●	▲	—	—
	L Low Resistance T Negative Land	3NU-TNGA 160404LT	1	3	0.4	2.2	—		—	●	—	—	—	—	—	—	—	—
		160408LT			0.8	1.9	—		—	●	—	—	—	—	—	—	—	—
		160412LT			1.2	1.9	—		—	●	—	—	—	—	—	—	—	—
	L Low Resistance S Negative Land With Honing	3NU-TNGA 160404LS	1	3	0.4	2.2	—	—	—	—	—	—	—	—	●	▲	—	—
		160408LS			0.8	1.9	—	—	—	—	—	—	—	—		▲	—	—
	H Strong Edge T Negative Land	3NU-TNGA 160404HT	1	3	0.4	2.2	—	—	—	—	●	—	—	—	—	—	—	—
		160408HT			0.8	1.9	—	—	—	—	●	—	—	—	—	—	—	—
		160412HT			1.2	1.9	—	—	—	—	●	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	3NU-TNGA 160404HS	1	3	0.4	2.2	—	—	—	●	—	—	●	▲	●	▲	—	—
		160408HS			0.8	1.9	—	—	—	●	—	—	●	▲		▲	—	—
		160412HS			1.2	1.9	—	—	—	●	—	—					—	—
	U Strong Edge S Negative Land With Honing	3NU-TNGA 160404US	1	3	0.4	2.2	—	—	—	—	—	—	—	—	●	—	—	—

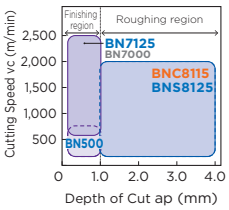
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

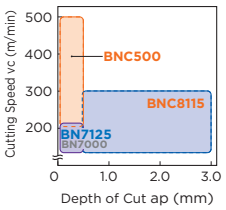
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

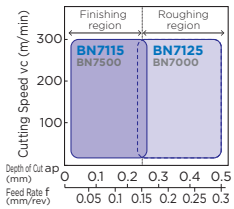
K Grey Cast Iron



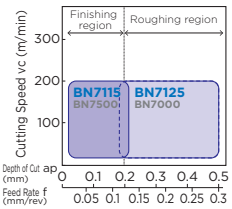
K Ductile Cast Iron



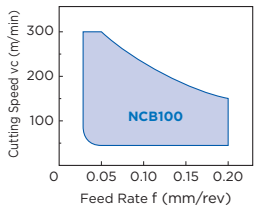
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

TN■■1604●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◔ ✖				✖	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◔	✖							
	Sintered Components							◔		●			

Applicable External Holders C29 to C35, D29, D41 Applicable Boring Bars E15, E45 to E47

Negative type (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TNMA 160402**	1	1	0.2	3.6		●		●							—	—
		160404			0.4	3.5		●		●							—	—
		160408			0.8	3.2		●		●		●		▲			—	—
		160412			1.2	2.9		●		●		●		▲			—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

Solid type / Negative (With Hole)

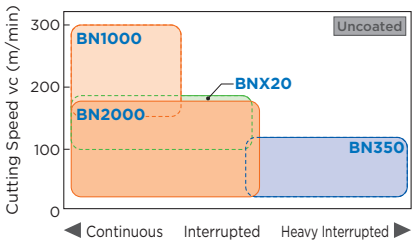
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TNGA 160408**	1	6	0.8	15.3	—	—	—	—	—	—	—	—	—	—	●	—
		160412			1.2	15.7	—	—	—	—	—	—	—	—	—	—	●	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

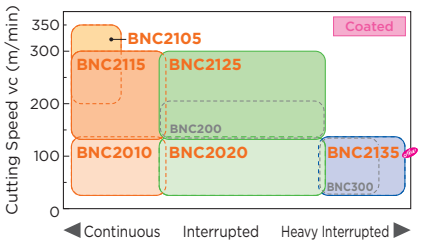
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

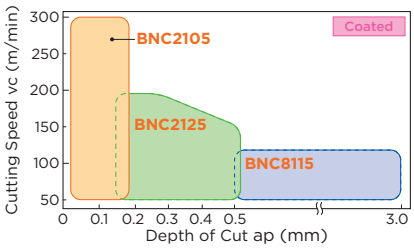
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

TNG■1604●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	✱ ✲
S	Exotic Alloy	
H	Hardened Steel	○ ● ◕ ✱ ○ ◔
	Sintered Components	

Applicable External Holders ☞ C29 to C35, D29, D41 | Applicable Boring Bars ☞ E15, E45 to E47

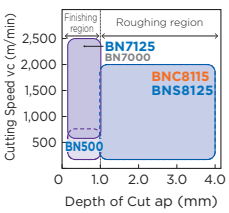
Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	3NC-TNGA 160404	1	3	0.4	2.2			●		●	●	▲			—
		160408			0.8	1.9			●		●	●	▲			—
		160412			1.2	1.9	●		●		●	●				—
		160416*			1.6	3.3					●	●	▲	●		—
		160420*			2.0	3.0					●	●	▲	●		—
		160424*			2.4	2.7					●	●	▲	●		—
	Standard	6NC-TNGA 160402	1	6	0.2	2.3		●	●		●	●				—
		160404			0.4	2.2	●	●	●	●	●	●	▲	●	●	—
		160408			0.8	1.9	●	●	●	●	●	●	▲	●	●	—
		160412			1.2	1.9		●	●	●	●	●	▲	●	●	—
		160416*			1.6	3.3		●	●	●	●	●	▲	●		—
		160420*			2.0	3.0		●	●	●	●	●	▲	●		—
		160424*			2.4	2.7		●	●	●	●	●	▲	●		—
	Finishing Chipbreaker	6NC-TNGG 160404N-FV	1	6	0.4	2.2		●	●	—	●	●	▲	—		—
		160408N-FV			0.8	1.9		●	●	—	●	●	▲	—		—
		160412N-FV			1.2	1.9		●	●	—	●	●	▲	—		—
	Light Cutting Chipbreaker	6NC-TNGG 160404N-LV	1	6	0.4	2.2		●	●	—	●	●	▲	—		—
		160408N-LV			0.8	1.9		●	●	—	●	●	▲	—		—
		160412N-LV			1.2	1.9		●	●	—	●	●	▲	—		—
	Carburised Layer Removal Chipbreaker	6NC-TNGG 160404N-SV	1	6	0.4	2.2				—				—		—
		160408N-SV			0.8	1.9		●	●	—	●	●	▲	—		—
		160412N-SV			1.2	1.9		●	●	—	●	●	▲	—		—
	L Low Resistance E With Honing	3NC-TNGA 160404LE	1	3	0.4	2.2	—	—	—	—	●	—	—	—	—	—
		160408LE			0.8	1.9	—	—	—	—	●	—	—	—	—	—
		160412LE			1.2	1.9	—	—	—	—	●	—	—	—	—	—
	L Low Resistance T Negative Land	3NC-TNGA 160402LT	1	3	0.2	2.3	—	—	—	—	—	●	—	—	—	—
		160404LT			0.4	2.2	—	—	—	—	—	●	—	—	—	—
		160408LT			0.8	1.9	—	—	—	—	—	●	—	—	—	—
		160412LT			1.2	1.9	—	—	—	—	—	●	—	—	—	—

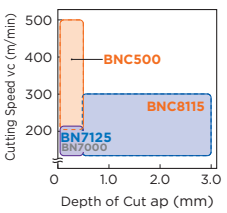
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details ☞ L32, L33
*For use with the SUMIBORON Special Holders for High-Efficiency Machining shown on page L130.

SUMIBORON Application Range Map

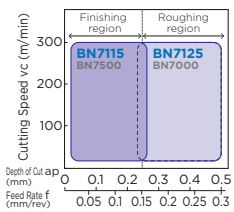
K Grey Cast Iron



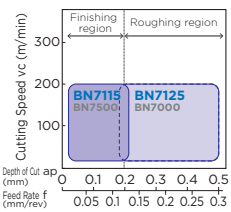
K Ductile Cast Iron



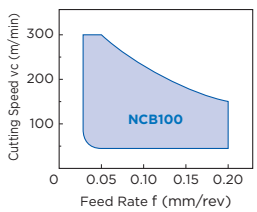
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

TNG■1604●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		Coated SUMIBORON								
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron								●	✱	
S	Exotic Alloy										
H	Hardened Steel	○	●	◔	✱	○	◔				
	Sintered Components										

Applicable External Holders C29 to C35, D29, D41
Applicable Boring Bars E15, E45 to E47

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	L Low Resistance S Negative Land With Honing	**3NC-TNGA 160402LS**	1	3	0.2	2.3			●		—	—		—	—	
		160404LS			0.4	2.2	●	●	●	●	—	—		●	—	—
		160408LS			0.8	1.9	●	●	●	●	—	—		●	—	—
		160412LS			1.2	1.9		●	●	●	—	—		●	—	—
	L Low Resistance S Negative Land With Honing	**6NC-TNGA 160404LS**	1	6	0.4	2.2	—	—	—		—	—	▲		—	—
		160408LS			0.8	1.9	—	—	—		—	—	▲		—	—
		160412LS			1.2	1.9	—	—	—		—	—	▲		—	—
	H Strong Edge S Negative Land With Honing	**6NC-TNGA 160404HS**	1	6	0.4	2.2		●	●	●	●	●	▲	●	●	—
		160408HS			0.8	1.9		●	●	●	●	●	▲	●	●	—
		160412HS			1.2	1.9		●	●	●	●	●	▲	●	●	—
	E High Efficiency S Negative Land With Honing	**6NC-TNGA 160404ES**	1	6	0.4	2.2						●	—	—	—	—
		160408ES			0.8	1.9						●	—	—	—	—
		160412ES			1.2	1.9						●	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

Solid type / Negative (Without Hole)

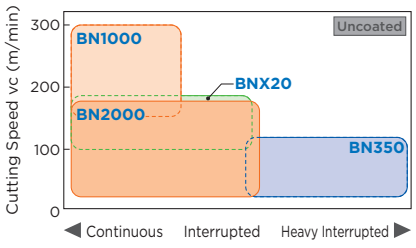
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**TNGA 160408**	1	6	0.8	15.3	—	—	—	—	—	—	—	—	—	●
		160412			1.2	15.7	—	—	—	—	—	—	—	—	—	●

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

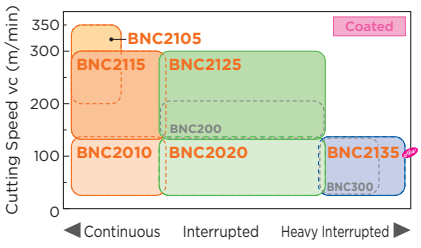
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

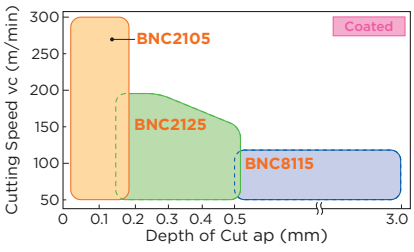
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation | General Machining ● 1st Recommendation ◔ 2nd Recommendation | Interrupted Cutting ✱ 1st Recommendation ✱ 2nd Recommendation

TNMA2204●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

Applicable External Holders C30 to C35 | Applicable Boring Bars E46, E47

Negative type (With Hole)

Recommended Application	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K Cast Iron						○	◔				✱	
S Exotic Alloy							●				◔	●
H Hardened Steel	○	◔	●	◔	✱							
Sintered Components							◔		●			
	Uncoated SUMIBORON										BINDERLESS SUMIBORON	

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length
	Standard	**TNMA 220408**	1	1	0.8	3.2
		220412			1.2	2.9

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

TNGN1103●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders L124

Solid type / Negative (Without Hole)

Recommended Application	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K Cast Iron						○	◔				✱	
S Exotic Alloy							●				◔	●
H Hardened Steel	○	◔	●	◔	✱							
Sintered Components							◔		●			
	Uncoated SUMIBORON										BINDERLESS SUMIBORON	

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length
	Standard	**TNGN 110308**	1	6	0.8	9.8
		110312			1.2	9.2
	L Low Resistance F Sharp Edge	**TNGN 110308LF**	1	6	0.8	9.8
		110312LF			1.2	9.2

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

TNGN1103●● Coated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	-
	Thickness	3.18		

Applicable External Holders L124

Solid type / Negative (Without Hole)

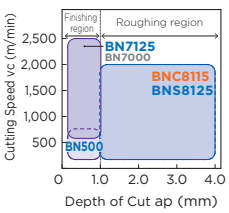
Recommended Application	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K Cast Iron									●	✱
S Exotic Alloy										
H Hardened Steel	○	●	◔	✱	○	◔				
Sintered Components										
	Coated SUMIBORON									

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length
	Standard	**TNGN 110308**	1	6	0.8	9.8
		110312			1.2	9.2

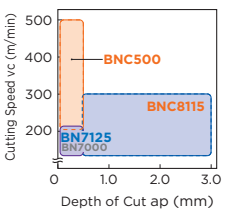
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

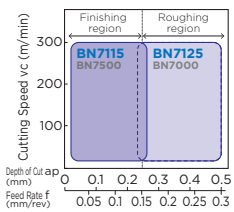
K Grey Cast Iron



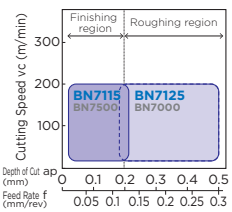
K Ductile Cast Iron



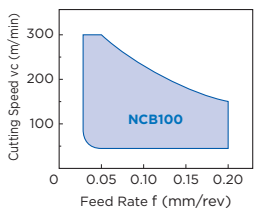
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



T Triangular type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative / Positive	T01225	S01225	S01225	T01225 / T01235	S01225	S01225	S01225	S01225

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

TNGN1604●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders L124

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Uncoated SUMIBORON | BINDERLESS SUMIBORON

Negative type (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TNGN 160404**	1	1	0.4	3.5		●		●							—	—
		160408			0.8	3.2		●		●							—	—
		160412			1.2	2.9				●							—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

Solid type / Negative (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TNGN 160408**	1	6	0.8	15.3	—	—	—	—	—	—	—	—	—	—	●	—
		160412			1.2	14.8	—	—	—	—	—	—	—	—	—	—	●	—
		160416			1.6	14.2	—	—	—	—	—	—	—	—	—	—	●	—
		160420			2.0	13.6	—	—	—	—	—	—	—	—	—	—	●	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

TNGN1604●● Coated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	4.76		

Applicable External Holders L124

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Coated SUMIBORON

Solid type / Negative (Without Hole)

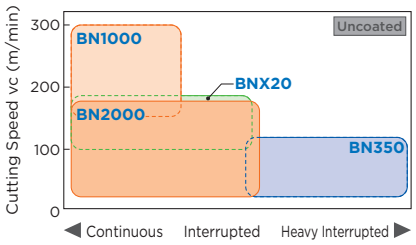
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**TNGN 160408**	1	6	0.8	15.3	—	—	—	—	—	—	—	—	—	●
		160412			1.2	14.8	—	—	—	—	—	—	—	—	—	●
		160416			1.6	14.2	—	—	—	—	—	—	—	—	—	●
		160420			2.0	13.6	—	—	—	—	—	—	—	—	—	●

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

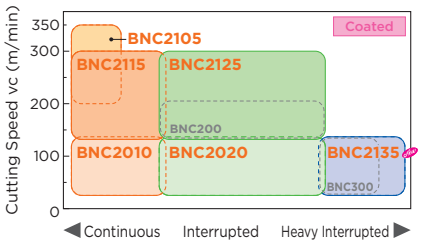
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

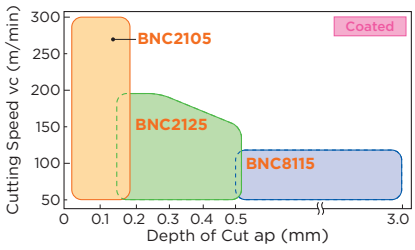
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



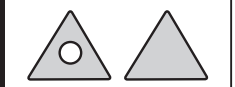
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



T Triangular type



TBEW0601 Uncoated

Dimensions (mm)	Inscribed Circle	3.97	Hole Dia.	2.2
	Thickness	1.59		

Applicable Boring Bars E40, E42

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application	Uncoated SUMIBORON											BINDERLESS SUMIBORON
	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K Cast Iron						○	◕				✱	
S Exotic Alloy							●				◕	●
H Hardened Steel	○	◔	●	◕	✱							
Sintered Components							◕		●			

One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	**NU-TBEW 060102LF**	1	1	0.2	2.1	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**NU-TBEW 060102LT**	1	1	0.2	2.1	—	●	—		—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

TBGN0601 Uncoated

Dimensions (mm)	Inscribed Circle	3.97	Hole Dia.	-
	Thickness	1.59		

Applicable Boring Bars E78

Recommended Application	Uncoated SUMIBORON											BINDERLESS SUMIBORON
	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K Cast Iron						○	◕				✱	
S Exotic Alloy							●				◕	●
H Hardened Steel	○	◔	●	◕	✱							
Sintered Components							◕		●			

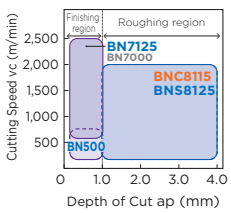
5° Positive type (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Full-top CBN (Standard)	**TBGN 060102B**	1	3	0.2	6.5		●		●				▲			—	—
		060104B			0.4	6.3	▲	●		●	●	●	●	▲			—	—
		060108B			0.8	5.7		●		●	●	●	●	▲			—	—
	Full-top CBN (Emphasis on Edge Sharpness)	**TBGN 060102-BSTN**	1	3	0.2	6.5	—	●	—	—	—	—	—	—	—	—	—	—
		060104-BSTN			0.4	6.3	—	●	—	—	—	—	—	—	—	—	—	—
		060108-BSTN			0.8	5.7	—	●	—	—	—	—	—	—	—	—	—	—

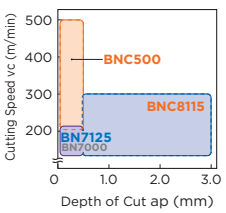
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

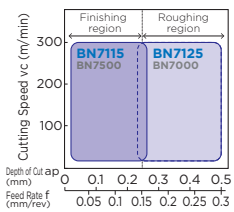
K Grey Cast Iron



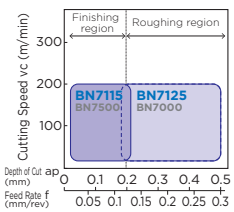
K Ductile Cast Iron



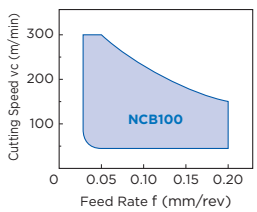
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application												
K	Cast Iron						○	●				
S	Exotic Alloy							●				●
H	Hardened Steel	○	◔	●	●	✱						
	Sintered Components							●		●		

TPGW0802●● Uncoated

Dimensions (mm)				
	Inscribed Circle	4.76	Hole Dia.	2.4
	Thickness	2.38		

Applicable Boring Bars E40 to E43

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
							Uncoated SUMIBORON										BINDERLESS SUMIBORON	
	Standard	**NU-TPGW 080202**	1	1	0.2	2.4			●	●				▲			—	
		080204			0.4	2.2	▲		●	●				▲			—	
		080208			0.8	1.9				●				▲			—	
	Standard	**T-NU-TPGW 080202**	10	1	0.2	2.4				●							—	—
		080204			0.4	2.2	▲		●	●							—	—
		080208			0.8	1.9											—	—
	L Low Resistance F Sharp Edge	**NU-TPGW 080202LF**	1	1	0.2	2.4	—	—	—	—	—	—					—	—
		080204LF			0.4	2.2	—	—	—	—	—	—		▲			—	—
		080208LF			0.8	1.9	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**NU-TPGW 080202LT**	1	1	0.2	2.4	—		—	●	—	—	—	—	—	—	—	—
		080204LT			0.4	2.2	—		—	●	—	—	—	—	—	—	—	—
		080208LT			0.8	1.9	—		—		—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-TPGW 080202HS**	1	1	0.2	2.4	—	—	—	●	—	—					—	—
		080204HS			0.4	2.2	—	—	—	●	—	—					—	—
		080208HS			0.8	1.9	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details L32, L33

Multi-Cornered One-Use type / 11° Positive (With Hole)

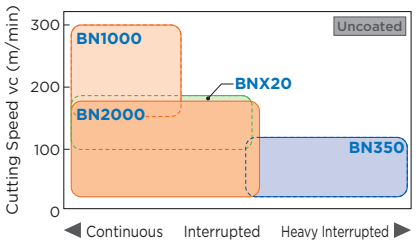
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**3NU-TPGW 080202**	1	3	0.2	2.4							●					
		080204			0.4	2.2							●					
	L Low Resistance F Sharp Edge	**3NU-TPGW 080204LF**	1	3	0.4	2.2	—	—	—	—	—	—	●					—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

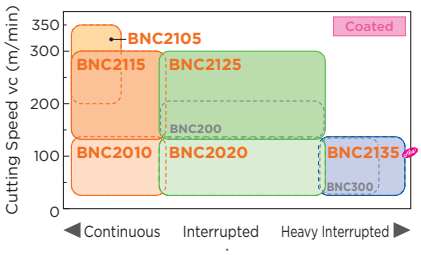
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

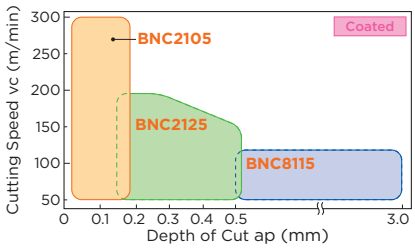
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

TPGW0802●● Coated

Dimensions (mm)				
	Inscribed Circle	4.76	Hole Dia.	2.4
	Thickness	2.38		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		Coated SUMIBORON								
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✱
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										

Applicable Boring Bars E40 to E43

Multi-Cornered One-Use type / 11° Positive (With Hole)

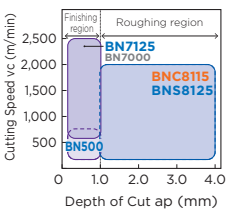
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	3NC-TPGW 080202	1	3	0.2	2.4		●	●		●	●				—
		080204			0.4	2.2		●	●	●	●	●				—
	H Strong Edge S Negative Land With Honing	3NC-TPGW 080204HS New	1	3	0.4	2.2				●						—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

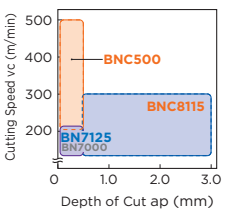
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

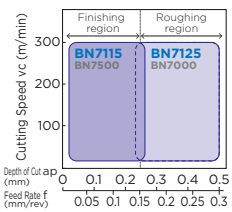
K Grey Cast Iron



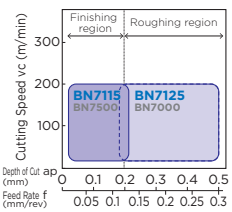
K Ductile Cast Iron



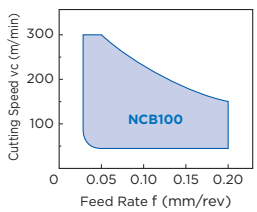
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



T Triangular type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

TPGW0902●● Uncoated

Dimensions (mm)	Inscribed Circle	5.56	Hole Dia.	2.8
	Thickness	2.38		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◔ ✖				✖	
S	Exotic Alloy							●				◔ ✖	●
H	Hardened Steel	○	◔	●	◔ ✖	✖							
	Sintered Components							◔ ✖		●			

Applicable Boring Bars E40

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-TPGW 090202**	1	1	0.2	2.3				●				▲			—	
		090204			0.4	2.2			●	●				▲			—	
		090208			0.8	1.9				●							—	
	L Low Resistance T Negative Land	**NU-TPGW 090202LT**	1	1	0.2	2.3	—		—	●	—	—	—	—	—	—	—	—
		090204LT			0.4	2.2	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-TPGW 090202HS**	1	1	0.2	2.3	—	—	—	●	—	—					—	—
		090204HS			0.4	2.2	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details L32, L33

Multi-Cornered One-Use type / 11° Positive (With Hole)

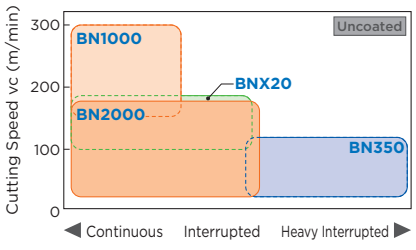
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**3NU-TPGW 090202**	1	3	0.2	2.3							●				—	
		090204			0.4	2.2							●				—	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

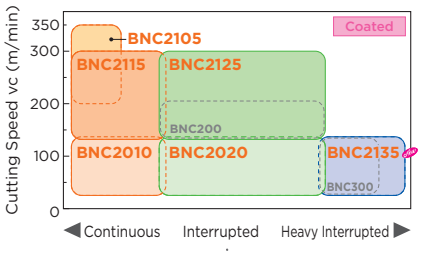
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

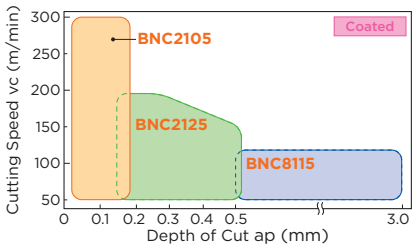
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

TPGW0902●● Coated

Dimensions (mm)	Inscribed Circle	5.56	Hole Dia.	2.8
	Thickness	2.38		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		Coated SUMIBORON									
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✱
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										

Multi-Cornered One-Use type / 11° Positive (With Hole)

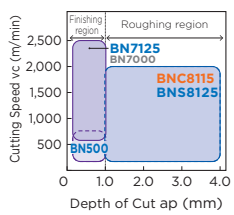
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**3NC-TPGW 090202**	1	3	0.2	2.3		●	●		●	●			●	—
		090204			0.4	2.2		●	●		●	●			●	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

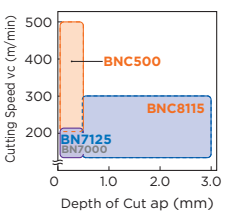
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

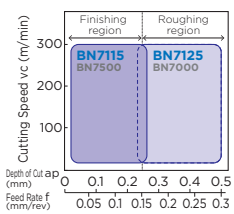
K Grey Cast Iron



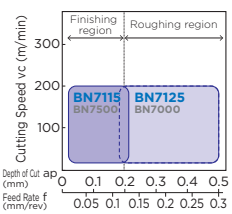
K Ductile Cast Iron



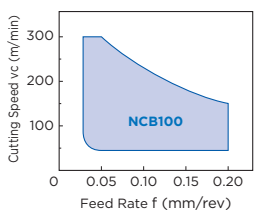
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



T Triangular type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

TPGW1102●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	2.38		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	●				✖	
S	Exotic Alloy							●				●	●
H	Hardened Steel	○	◔	●	●	✖							
	Sintered Components							●		●			

Applicable Boring Bars E40

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-TPGW 110202**	1	1	0.2	2.4				●				▲			—	
		110204			0.4	2.3	▲			●				▲			—	
		110208			0.8	2.0											—	
		T-NU-TPGW 110202	10	1	0.2	2.4											—	—
		110204			0.4	2.3	▲			●							—	—
		110208			0.8	2.0											—	—
	L Low Resistance T Negative Land	**NU-TPGW 110202LT**	1	1	0.2	2.4	—		—	●	—	—	—	—	—	—	—	—
		110204LT			0.4	2.3	—		—	●	—	—	—	—	—	—	—	—
		110208LT			0.8	2.0	—		—		—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-TPGW 110204HS**	1	1	0.4	2.3	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

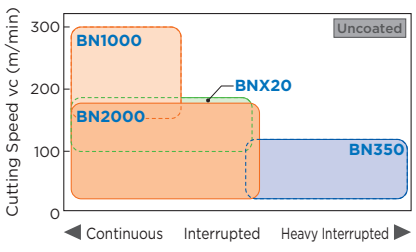
Multi-Cornered One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**3NU-TPGW 110202**	1	3	0.2	2.4							●				—	
		110204			0.4	2.3							●	▲		▲	—	
		110208			0.8	2.0							●	▲		▲	—	
	L Low Resistance F Sharp Edge	**3NU-TPGW 110204LF**	1	3	0.4	2.3	—	—	—	—	—	—	●	▲		▲	—	—
	L Low Resistance E With Honing	**3NU-TPGW 110204LE**	1	3	0.4	2.3	—	—	—	—	—	—	●	—		▲	—	—
	L Low Resistance S Negative Land With Honing	**3NU-TPGW 110204LS**	1	3	0.4	2.3	—	—	—	—	—	—	—	—		▲	—	—

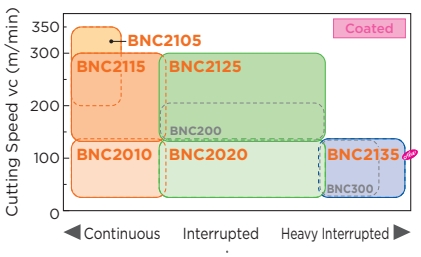
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

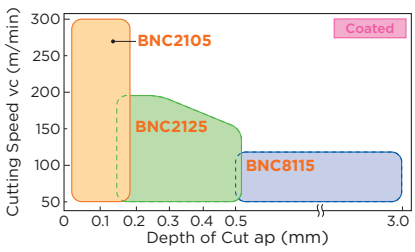
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

TPG■1103●● Uncoated

Dimensions (mm)				
	Inscribed Circle	6.35	Hole Dia.	3.4
	Thickness	3.18		

Applicable Boring Bars ☞ E14, E40 to E43

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application													
	K Cast Iron						○	◕				✱	
	S Exotic Alloy							●				◕	●
	H Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-TPGW 110302**	1	1	0.2	2.4	▲	●	●	●		●		▲			—	
		110304			0.4	2.3	▲	●	●	●	●	●		▲			—	
		110308			0.8	2.0	▲	●	●	●	●	●		▲			—	
		T-NU-TPGW 110302	10	1	0.2	2.4	▲	●	●	●							—	—
		110304			0.4	2.3	▲	●	●	●	●						—	—
		110308			0.8	2.0	▲	●	●	●	●						—	—
	L Low Resistance F Sharp Edge	**NU-TPGW 110302LF**	1	1	0.2	2.4	—	—	—	—	—	—		▲	—		—	—
		110304LF			0.4	2.3	—	—	—	—	—	—		▲	—		—	—
		110308LF			0.8	2.0	—	—	—	—	—	—		▲	—		—	—
	L Low Resistance T Negative Land	**NU-TPGW 110302LT**	1	1	0.2	2.4	—	●	—	●	—	—	—	—	—	—	—	—
		110304LT			0.4	2.3	—	●	—	●	—	—	—	—	—	—	—	—
		110308LT			0.8	2.0	—	●	—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-TPGW 110302HS**	1	1	0.2	2.4	—	—	—	●	—	—					—	—
		110304HS			0.4	2.3	—	—	—	●	—	—					—	—
		110308HS			0.8	2.0	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details ☞ L32, L33

Multi-Cornered One-Use type / 11° Positive (With Hole)

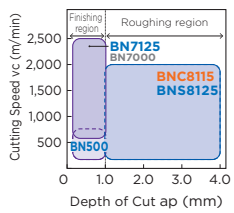
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**3NU-TPGW 110302**	1	3	0.2	2.4							●				—	
		110304			0.4	2.3							●	▲	●	▲	—	
		110308			0.8	2.0							●	▲	●	▲	—	
	Finishing Chipbreaker	**3NU-TPGT 110304N-FV**	1	3	0.4	2.3	—	—		●	—	—	—	—	—	—	—	—
		110308N-FV			0.8	2.0	—	—		●	—	—	—	—	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

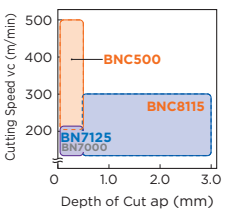
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

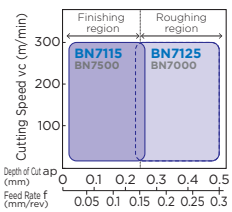
K Grey Cast Iron



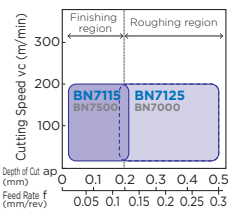
K Ductile Cast Iron



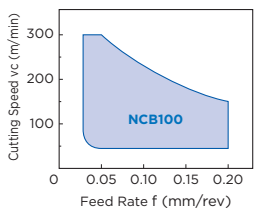
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ○ 2nd Recommendation; Interrupted Cutting: ✱ 1st Recommendation ✱ 2nd Recommendation

Recommended Application		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	K Cast Iron						○	● ✱				✱	
	S Exotic Alloy							●				● ✱	●
	H Hardened Steel	○	○ ✱	●	● ✱	✱							
	Sintered Components							● ✱		●			

TPG■1103●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	3.4
	Thickness	3.18		

Applicable Boring Bars ☞E14, E40 to E43

Multi-Cornered One-Use type / 11° Positive (With Hole)

Uncoated SUMIBORON | BINDERLESS SUMIBORON

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	**3NU-TPGW 110302LF**	1	3	0.2	2.4	—	—	—	—	—	—	●	▲	●	▲	—	—
		110304LF			0.4	2.3	—	—	—	—	—	—	●	▲	●	▲	—	—
		110308LF			0.8	2.0	—	—	—	—	—	—	●	▲	●	▲	—	—
	L Low Resistance E With Honing	**3NU-TPGW 110302LE**	1	3	0.2	2.4	—	—	—	—	—	—	●	—			—	—
		110304LE			0.4	2.3	—	—	—	—	—	—	●	—	●	▲	—	—
		110308LE			0.8	2.0	—	—	—	—	—	—	●	—			—	—
	L Low Resistance S Negative Land With Honing	**3NU-TPGW 110304LS**	1	3	0.4	2.3	—	—	—	—	—	—	—	—		▲	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details ☞L32, L33

11° Positive type (With Hole)

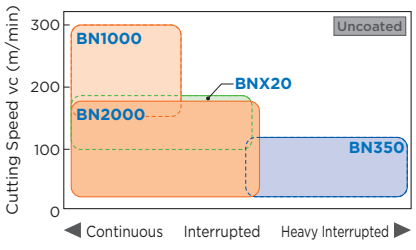
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGW 110304**	1	1	0.4	3.5		●		●				▲			—	—
		110308			0.8	3.2		●		●							—	—
	H Strong Edge S Negative Land With Honing	**TPGW 110304HS**	1	1	0.4	3.5	—	—	—	●	—	—					—	—
		110308HS			0.8	3.2	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

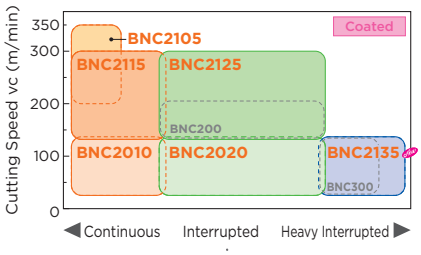
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

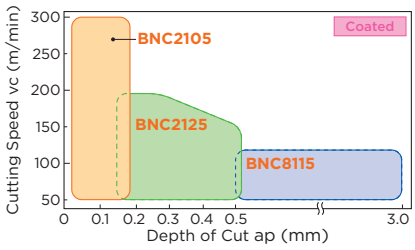
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

TPG■1103●● Coated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	3.4
	Thickness	3.18		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application											
K Cast Iron										●	✱
S Exotic Alloy											
H Hardened Steel	○	●	◕	✱	○	◔					
Sintered Components											

Applicable Boring Bars ☞ E14, E40 to E43

Multi-Cornered One-Use type / 11° Positive (With Hole)

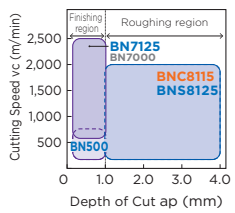
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	3NC-TPGW 110302	1	3	0.2	2.4		●	●		●	●				—
		110304			0.4	2.3	●	●	●	●	●	●	▲	●	●	—
		110308			0.8	2.0	●	●	●	●	●	●	▲	●	●	—
	Finishing Chipbreaker	3NC-TPGT 110304N-FV	1	3	0.4	2.3		●	●	—	●	●	▲	—		—
		110308N-FV			0.8	2.0		●	●	—	●	●	▲	—		—
	L Low Resistance E With Honing	3NC-TPGW 110302LE	1	3	0.2	2.4	—	—	—	—	●	—	—	—	—	—
		110304LE			0.4	2.3	—	—	—	—	●	—	—	—	—	—
		110308LE			0.8	2.0	—	—	—	—	●	—	—	—	—	—
	L Low Resistance T Negative Land	3NC-TPGW 110302LT	1	3	0.2	2.4	—	—	—	—	—	●	—	—	—	—
		110304LT			0.4	2.3	—	—	—	—	—	●	—	—	—	—
		110308LT			0.8	2.0	—	—	—	—	—	●	—	—	—	—
	L Low Resistance S Negative Land With Honing	3NC-TPGW 110302LS	1	3	0.2	2.4		●	●		—	—			—	—
		110304LS			0.4	2.3	●	●	●	●	—	—	▲	●	—	—
		110308LS			0.8	2.0	●	●	●	●	—	—	▲	●	—	—
	H Strong Edge S Negative Land With Honing	3NC-TPGW 110304HS	1	3	0.4	2.3				●				●		—
		110308HS			0.8	2.0				●				●		—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

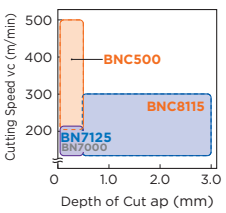
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

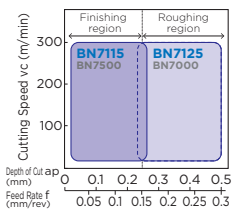
K Grey Cast Iron



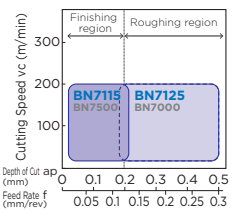
K Ductile Cast Iron



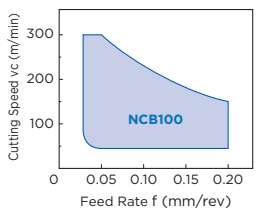
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation, 2nd Recommendation; General Machining: 1st Recommendation, 2nd Recommendation; Interrupted Cutting: 1st Recommendation, 2nd Recommendation

TPGW1603 Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	3.18		

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	●				●	
S	Exotic Alloy							●				●	●
H	Hardened Steel	○	◔	●	●	●							
	Sintered Components							●		●			

Applicable Boring Bars E40

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-TPGW 160302**	1	1	0.2	2.4				●							—	
		160304			0.4	2.3				●							—	
		160308			0.8	2.0				●							—	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details L32, L33

TPGW1604 Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	●				●	
S	Exotic Alloy							●				●	●
H	Hardened Steel	○	◔	●	●	●							
	Sintered Components							●		●			

Applicable Boring Bars E14, E40 to E42

One-Use type / 11° Positive (With Hole)

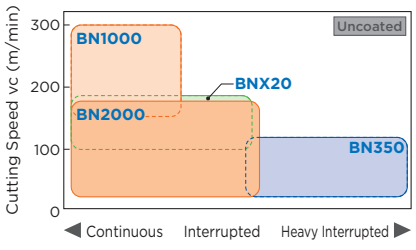
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-TPGW 160402**	1	1	0.2	2.4											—	
		160404			0.4	2.3	▲	●	●	●	●	●		▲			—	
		160408			0.8	2.0	▲	●	●	●	●	●		▲			—	
	Standard	**T-NU-TPGW 160402**	10	1	0.2	2.4											—	—
		160404			0.4	2.3	▲	●	●	●	●	●					—	—
		160408			0.8	2.0	▲	●	●	●	●						—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

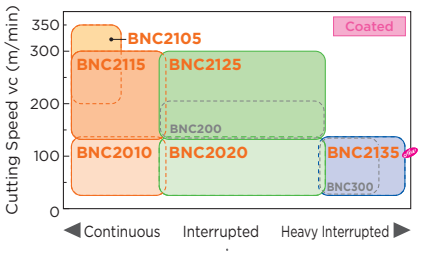
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

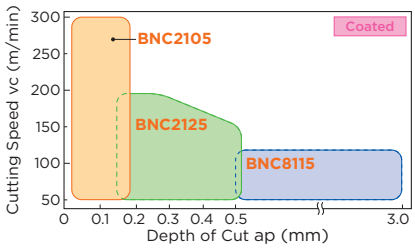
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

TPGW1604 Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✱ 2nd Recommendation

Recommended Application		
	K	Cast Iron
	S	Exotic Alloy
	H	Hardened Steel
		Sintered Components

Applicable Boring Bars ☞ E14, E40 to E42

One-Use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	**NU-TPGW 160402LF**	1	1	0.2	2.4	—	—	—	—	—	—					—	—
		160404LF			0.4	2.3	—	—	—	—	—	—		▲			—	—
		160408LF			0.8	2.0	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**NU-TPGW 160402LT**	1	1	0.2	2.4	—		—		—	—	—	—	—	—	—	—
		160404LT			0.4	2.3	—	●	—	●	—	—	—	—	—	—	—	—
		160408LT			0.8	2.0	—	●	—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-TPGW 160404HS**	1	1	0.4	2.3	—	—	—	●	—	—					—	—
		160408HS			0.8	2.0	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

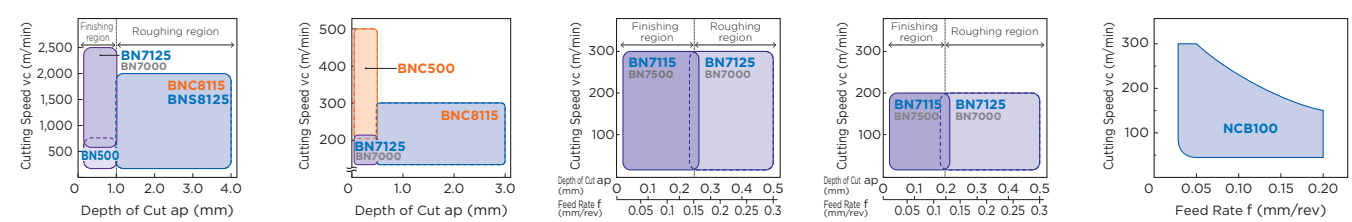
Multi-Cornered One-use type / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**3NU-TPGW 160404**	1	3	0.4	2.3							●				—	
		160408			0.8	2.0							●				—	
	L Low Resistance F Sharp Edge	**3NU-TPGW 160404LF**	1	3	0.4	2.3	—	—	—	—	—	—	●				—	—
		160408LF			0.8	2.0	—	—	—	—	—	—	●				—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application	Uncoated SUMIBORON										BINDERLESS SUMIBORON
	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K Cast Iron						○	◕				✱	
S Exotic Alloy							●				◕	●
H Hardened Steel	○	◔	●	◕	✱							
Sintered Components							◕		●			

TPGW1604●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

Applicable Boring Bars E14, E40 to E42

11° Positive type (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGW 160404**	1	1	0.4	3.5		●		●							—	—
		160408			0.8	3.2		●		●							—	—
		160412			1.2	2.9											—	—
	H Strong Edge S Negative Land With Honing	**TPGW 160404HS**	1	1	0.4	3.5	—	—	—	●	—	—					—	—
		160408HS			0.8	3.2	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

TPGW1604●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

Applicable Boring Bars E14, E40 to E42

Recommended Application	Coated SUMIBORON									
	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K Cast Iron									●	✱
S Exotic Alloy										
H Hardened Steel	○	●	◕	✱	○	◔				
Sintered Components										

Multi-Cornered One-Use type / 11° Positive (With Hole)

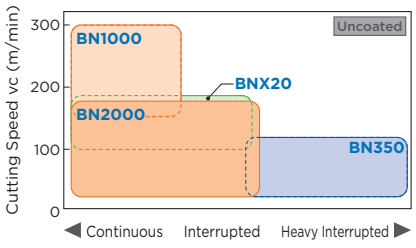
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**3NC-TPGW 160402**	1	3	0.2	2.4										—
		160404			0.4	2.3	●	●	●		●	●	▲		●	—
		160408			0.8	2.0	●	●	●		●	●	▲		●	—
	L Low Resistance S Negative Land With Honing	**3NC-TPGW 160404LS**	1	3	0.4	2.3					—	—	▲		—	—
		160408LS			0.8	2.0					—	—	▲		—	—
	H Strong Edge S Negative Land With Honing	**3NC-TPGW 160404HS**	1	3	0.4	2.3			●		●	●	▲			—
		160408HS			0.8	2.0			●		●	●	▲			—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

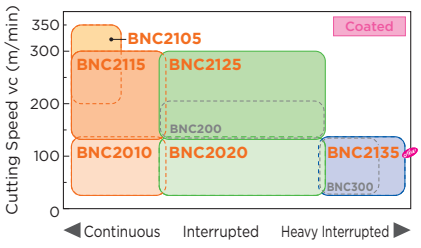
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

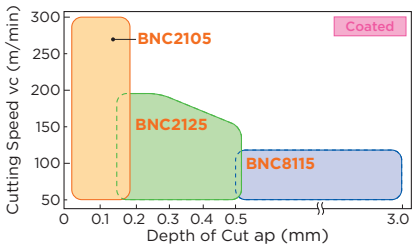
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

TPGN0902●● Uncoated

Dimensions (mm)	Inscribed Circle	5.56	Hole Dia.	-
	Thickness	2.38		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application													
	K Cast Iron						○	◕				✱	
	S Exotic Alloy							●				◕	●
	H Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

11° Positive type (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGN 090204**	1	1	0.4	3.5		●		●		●					—	—
		090208			0.8	3.2											—	—
	H Strong Edge S Negative Land With Honing	**TPGN 090204HS**	1	1	0.4	3.5	—	—	—	●	—	—					—	—

Uncoated SUMIBORON / BINDERLESS SUMIBORON

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

TPGN1103●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	-
	Thickness	3.18		

Applicable Boring Bars E44

Recommended Application													
	K Cast Iron						○	◕				✱	
	S Exotic Alloy							●				◕	●
	H Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

One-Use type / 11° Positive (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-TPGN 110302**	1	1	0.2	2.4				●							—	—
		110304			0.4	2.3		●		●	●	●		▲			—	—
		110308			0.8	2.0		●	●	●	●	●		▲			—	—
		110312			1.2	2.0											—	—
		T-NU-TPGN 110302	10	1	0.2	2.4											—	—
		110304			0.4	2.3		●		●							—	—
		110308			0.8	2.0		●		●							—	—
		110312			1.2	2.0											—	—

Uncoated SUMIBORON / BINDERLESS SUMIBORON

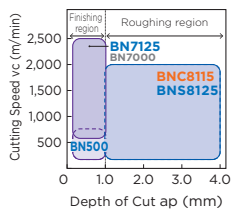
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

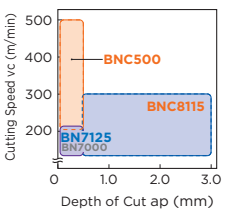
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

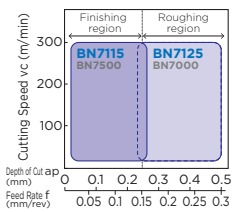
K Grey Cast Iron



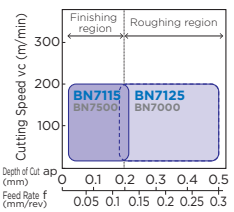
K Ductile Cast Iron



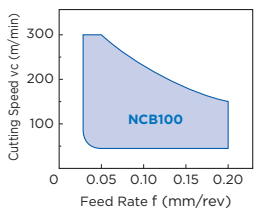
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

TPGN1103●● Uncoated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	-
	Thickness	3.18		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◔				✖	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◔	✖							
	Sintered Components							◔		●			

Applicable Boring Bars E44

One-Use type / 11° Positive (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance T Negative Land	**NU-TPGN 110302LT**	1	1	0.2	2.4	—		—	●	—	—	—	—	—	—	—	—
		110304LT			0.4	2.3	—		—	●	—	—	—	—	—	—	—	—
		110308LT			0.8	2.0	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-TPGN 110304HS**	1	1	0.4	2.3	—	—	—	●	—	—					—	—
		110308HS			0.8	2.0	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

11° Positive type (Without Hole)

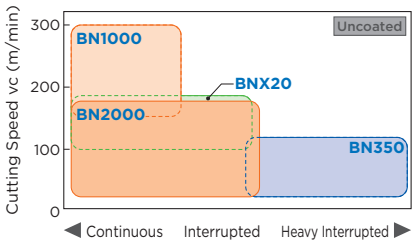
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGN 110304**	1	1	0.4	3.5		●		●				▲			—	—
		110308			0.8	3.2				●							—	—
	H Strong Edge S Negative Land With Honing	**TPGN 110304HS**	1	1	0.4	3.5	—	—	—	●	—	—					—	—
		110308HS			0.8	3.2	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

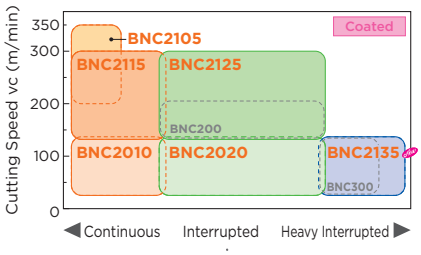
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

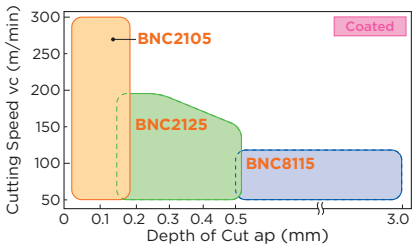
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

TPGN1603●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	-
	Thickness	3.18		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Applicable External Holders C36, C37 Applicable Boring Bars E44

One-Use type / 11° Positive (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-TPGN 160302**	1	1	0.2	2.4				●							—	
		160304			0.4	2.3		●	●	●	●			▲			—	
		160308			0.8	2.0		●		●	●	●		▲			—	
		T-NU-TPGN 160302	10	1	0.2	2.4											—	—
		160304			0.4	2.3		●		●							—	—
		160308			0.8	2.0		●		●							—	—
	L Low Resistance T Negative Land	**NU-TPGN 160304LT**	1	1	0.4	2.3	—		—	●	—	—	—	—	—	—	—	—
		160308LT			0.8	2.0	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-TPGN 160304HS**	1	1	0.4	2.3	—	—	—	●	—	—					—	—
		160308HS			0.8	2.0	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.

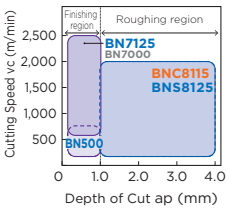
11° Positive type (Without Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGN 160304**	1	1	0.4	3.5		●		●		●		▲			—	—
		160308			0.8	3.2		●		●							—	—
		160312			1.2	2.9											—	—
	H Strong Edge S Negative Land With Honing	**TPGN 160304HS**	1	1	0.4	3.5	—	—	—	●	—	—					—	—
		160308HS			0.8	3.2	—	—	—	●	—	—					—	—

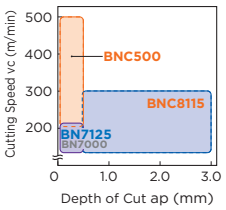
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

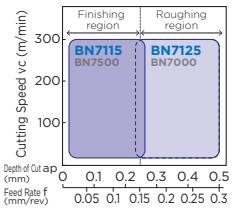
K Grey Cast Iron



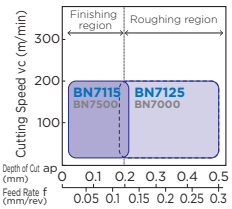
K Ductile Cast Iron



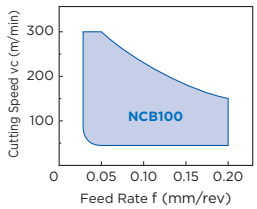
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

T Triangular type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

TPGN2204●● Uncoated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	-
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✱ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◔ ●				✖	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◔ ●	✖							
	Sintered Components							◔ ●		●			

Applicable External Holders ☞C36, C37

11° Positive type (Without Hole)

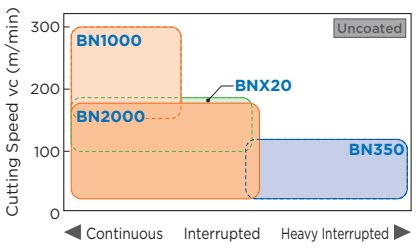
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**TPGN 220408**	1	1	0.8	3.2		●		●							—	—
	H Strong Edge S Negative Land With Honing	**TPGN 220408HS**	1	1	0.8	3.2	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

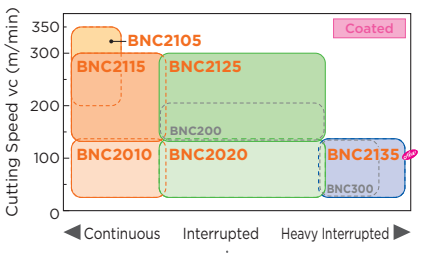
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

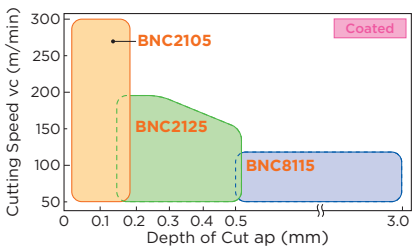
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel

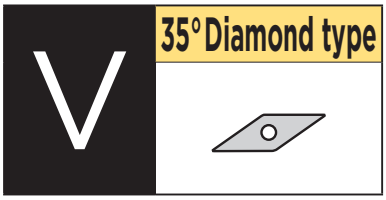


H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)





VN■■1604●● Uncoated

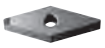
Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

Applicable External Holders C38, C39

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application: K Cast Iron, S Exotic Alloy, H Hardened Steel, Sintered Components

One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-VNMA 160401**	1	1	0.1	3.5				●							—	—
		160402			0.2	3.3				●							—	—
		160404			0.4	2.8	▲	●	●	●	●	●		▲			—	—
		160408			0.8	1.9	▲	●	●	●	●	●		▲			—	—
		160412			1.2	1.7				●							—	—
		T-NU-VNMA 160401	10	1	0.1	3.5											—	—
		160402			0.2	3.3											—	—
		160404			0.4	2.8	▲	●	●	●	●						—	—
		160408			0.8	1.9	▲	●	●	●	●						—	—
		160412			1.2	1.7											—	—
	Standard	**NU-VNGA 160404**	1	1	0.4	2.5	—	—	—	—	—	—	—	—	—	—	—	●
		160408			0.8	1.6	—	—	—	—	—	—	—	—	—	—	—	●

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details L32, L33

Multi-Cornered One-Use type / Negative (With Hole)

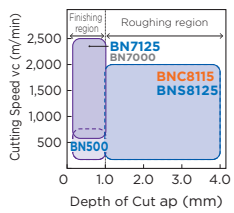
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**2NU-VNGA 160404**	1	2	0.4	2.8		●	●	●	●		●	▲	●	▲	—	
		160408			0.8	1.9		●	●	●	●		●	▲	●	▲	—	
		T-2NU-VNGA 160404	10	2	0.4	2.8		●		●							—	—
		160408			0.8	1.9		●		●							—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

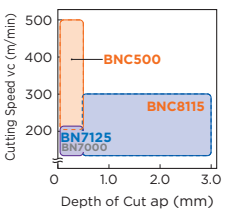
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

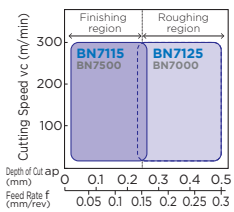
K Grey Cast Iron



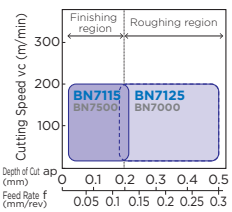
K Ductile Cast Iron



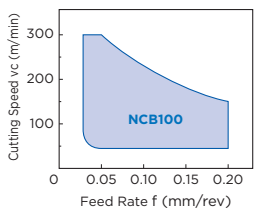
General Sintered Alloy



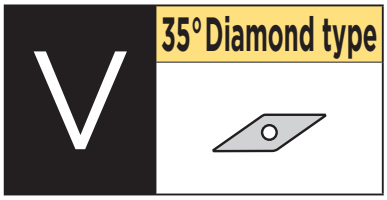
High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

VN■■1604●● Uncoated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ○ 2nd Recommendation; Interrupted Cutting: ✱ 1st Recommendation ✱ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	●				✱	
S	Exotic Alloy							●				●	●
H	Hardened Steel	○	○	●	●	✱							
	Sintered Components							●		●			

Applicable External Holders ☞C38, C39

Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Light Cutting Chipbreaker	**2NU-VNGM 160404N-LV**	1	2	0.4	2.8	—	—		●	—	—	—	—	—	—	—	—
		160408N-LV			0.8	1.9	—	—		●	—	—	—	—	—	—	—	—
	L Low Resistance T Negative Land	**2NU-VNGA 160404LT**	1	2	0.4	2.8	—		—	●	—	—	—	—	—	—	—	—
		160408LT			0.8	1.9	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge T Negative Land	**2NU-VNGA 160404HT**	1	2	0.4	2.8	—	—	—	—	●	—	—	—	—	—	—	—
		160408HT			0.8	1.9	—	—	—	—	●	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**2NU-VNGA 160404HS**	1	2	0.4	2.8	—	—	—	●	—	—					—	—
		160408HS			0.8	1.9	—	—	—	●	—	—	●	▲			—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details ☞L32, L33

Negative type (With Hole)

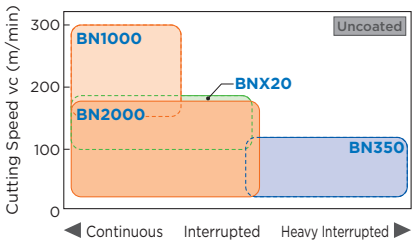
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**VNMA 160404**	1	1	0.4	5.0		●		●							—	—
		160408			0.8	4.1		●		●				▲			—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

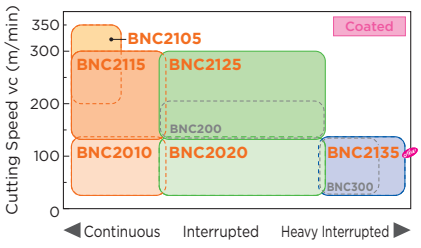
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

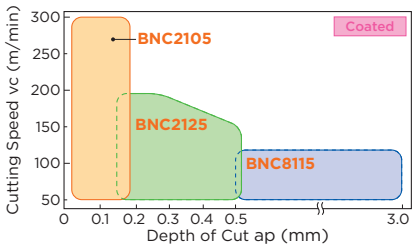
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



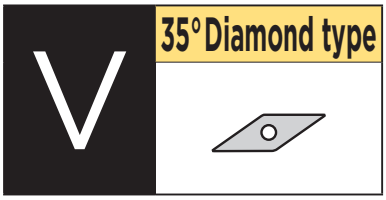
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



VNG■1604●● Coated

Dimensions (mm)	Inscribed Circle	9.525	Hole Dia.	3.81
	Thickness	4.76		

Applicable External Holders C38, C39

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application	
K	Cast Iron
S	Exotic Alloy
H	Hardened Steel
	Sintered Components

Multi-Cornered One-Use type / Negative (With Hole)

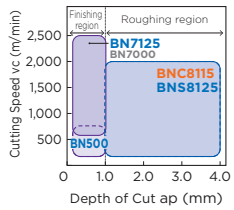
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	2NC-VNGA 160404	1	2	0.4	2.8			●		●	●	▲			—
		160408			0.8	1.9			●		●	●	▲			—
		160412			1.2	1.7			●							—
	Standard	4NC-VNGA 160402	1	4	0.2	3.3		●	●		●	●				—
		160404			0.4	2.8	●	●	●	●	●	●	▲	●	●	—
		160408			0.8	1.9	●	●	●	●	●	●	▲	●	●	—
		160412			1.2	1.7		●	●			●	▲			—
	Finishing Chipbreaker	4NC-VNGG 160404N-FV	1	4	0.4	2.8			●	—	●	●	▲	—		—
		160408N-FV			0.8	1.9			●	—	●	●	▲	—		—
	Light Cutting Chipbreaker	4NC-VNGG 160404N-LV	1	4	0.4	2.8			●	—	●	●	▲	—		—
		160408N-LV			0.8	1.9			●	—	●	●	▲	—		—
	L Low Resistance T Negative Land	2NC-VNGA 160402LT	1	2	0.2	3.3	—	—	—	—	—	●	—	—	—	—
		160404LT			0.4	2.8	—	—	—	—	—	●	—	—	—	—
		160408LT			0.8	1.9	—	—	—	—	—	●	—	—	—	—
		160412LT			1.2	1.7	—	—	—	—	—	●	—	—	—	—
	L Low Resistance S Negative Land With Honing	2NC-VNGA 160402LS	1	2	0.2	3.3			●		—	—			—	—
		160404LS			0.4	2.8	●	●	●		—	—			—	—
		160408LS			0.8	1.9	●	●	●		—	—			—	—
		160412LS			1.2	1.7		●	●		—	—			—	—
	L Low Resistance S Negative Land With Honing	4NC-VNGA 160404LS	1	4	0.4	2.8	—	—	—		—	—	▲		—	—
		160408LS			0.8	1.9	—	—	—		—	—	▲		—	—
		160412LS			1.2	1.7	—	—	—		—	—	▲		—	—
	H Strong Edge S Negative Land With Honing	4NC-VNGA 160404HS	1	4	0.4	2.8	●	●	●	●	●	●	▲	●	●	—
		160408HS			0.8	1.9	●	●	●	●	●	●	▲	●	●	—
		160412HS			1.2	1.7		●	●			●	▲			—
	E High Efficiency S Negative Land With Honing	4NC-VNGA 160404ES	1	4	0.4	2.8						●	—	—	—	—
		160408ES			0.8	1.9						●	—	—	—	—
		160412ES			1.2	1.7						●	—	—	—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

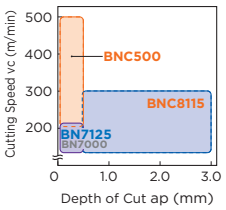
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

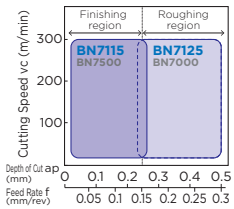
K Grey Cast Iron



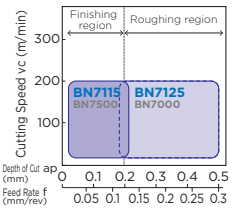
K Ductile Cast Iron



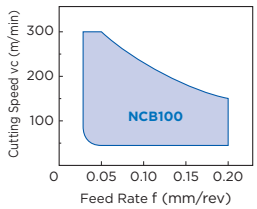
General Sintered Alloy



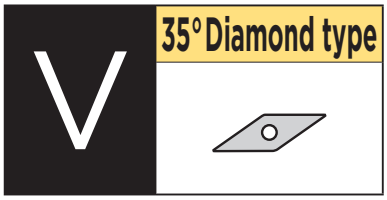
High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

VBGW1103 ● ● Uncoated

Dimensions (mm)				
	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	3.18		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ○ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✖ 2nd Recommendation

Recommended Application

K	Cast Iron						○	●				✖	
S	Exotic Alloy							●				●	●
H	Hardened Steel	○	○	●	●	✖							
	Sintered Components							●		●			

One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-VBGW 110302**	1	1	0.2	3.2			●	●							—	
		110304			0.4	2.8*1			●	●				▲			—	●
		110308			0.8	1.9*2				●				▲			—	●
	L Low Resistance T Negative Land	**NU-VBGW 110302LT**	1	1	0.2	3.2	—		—	●	—	—	—	—	—	—	—	—
		110304LT			0.4	2.8	—		—	●	—	—	—	—	—	—	—	—
		110308LT			0.8	1.9	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-VBGW 110302HS**	1	1	0.2	3.2	—	—	—	●	—	—					—	—
		110304HS			0.4	2.8	—	—	—	●	—	—					—	—
		110308HS			0.8	1.9	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

*Depth of cut for one-use types is 0.5mm or less.
*1: NCB100 cutting edge length is 2.5.
*2: NCB100 cutting edge length is 1.6.

Multi-Cornered One-Use type / 5° Positive (With Hole)

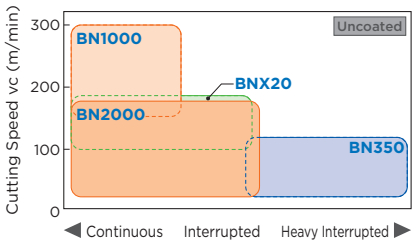
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**2NU-VBGW 110302**	1	2	0.2	3.2							●				—	
		110304			0.4	2.8							●	▲	●		—	
		110308			0.8	1.9								▲			—	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

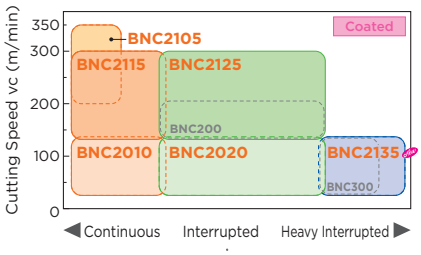
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

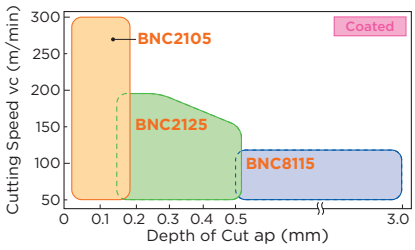
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



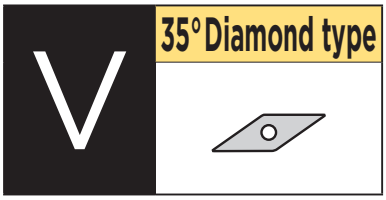
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



VBGW1103●● Coated

Dimensions (mm)	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	3.18		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		Coated SUMIBORON								
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✱
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										

Applicable Boring Bars ☞E48, E50, E51, E53, E54, E56, E57

Multi-Cornered One-Use type / 5° Positive (With Hole)

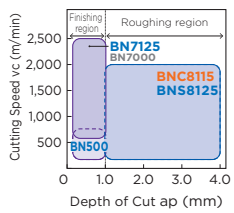
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**2NC-VBGW 110302**	1	2	0.2	3.2		●	●		●	●				—
		110304			0.4	2.8		●	●	●	●	●			●	—
		110308			0.8	1.9		●	●	●	●	●			●	—
	L Low Resistance T Negative Land	**2NC-VBGW 110302LT**	1	2	0.2	3.2	—	—	—	—	—	●	—	—	—	—
		110304LT			0.4	2.8	—	—	—	—	—	●	—	—	—	—
	L Low Resistance S Negative Land With Honing	**2NC-VBGW 110302LS**	1	2	0.2	3.2		●	●		—	—			—	—
		110304LS			0.4	2.8		●	●		—	—			—	—
		110308LS			0.8	1.9		●	●		—	—			—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

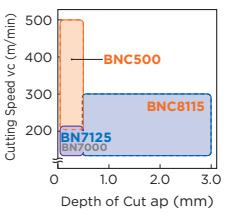
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

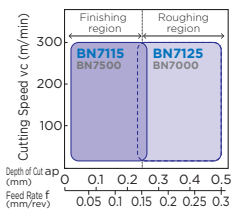
K Grey Cast Iron



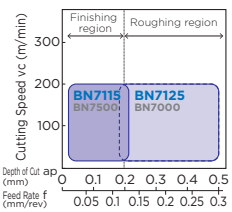
K Ductile Cast Iron



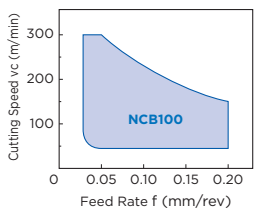
General Sintered Alloy



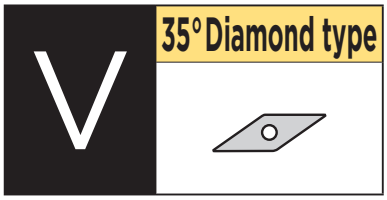
High-density Sintered Alloy



S Titanium Alloy



SUMIBORON Inserts



Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

VBGW1604●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✱ 1st Recommendation ✱ 2nd Recommendation

Recommended Application												
K	Cast Iron						○	◔ ●				✱
S	Exotic Alloy							●				◔ ●
H	Hardened Steel	○	◔	●	◔ ●	✱						
	Sintered Components							◔ ●		●		

Applicable Boring Bars ☞ E14, E48, E50, E53, E56

One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
							Uncoated SUMIBORON										BINDERLESS SUMIBORON	
	Standard	**NU-VBGW 160402**	1	1	0.2	3.8			●	●							—	
		160404			0.4	3.3*1			●	●							—	●
		160408			0.8	2.4*2			●	●							—	●
	L Low Resistance T Negative Land	**NU-VBGW 160402LT**	1	1	0.2	3.8	—		—	●	—	—	—	—	—	—	—	—
		160404LT			0.4	3.3	—		—	●	—	—	—	—	—	—	—	—
		160408LT			0.8	2.4	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-VBGW 160404HS**	1	1	0.4	3.3	—	—	—	●	—	—					—	—
		160408HS			0.8	2.4	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

*Depth of cut for one-use types is 0.5mm or less.
*1: NCB100 cutting edge length is 2.5.
*2: NCB100 cutting edge length is 1.6.

Multi-Cornered One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**2NU-VBGW 160404**	1	2	0.4	3.3							●	▲	●		—	
		160408			0.8	2.4							●	▲	●		—	

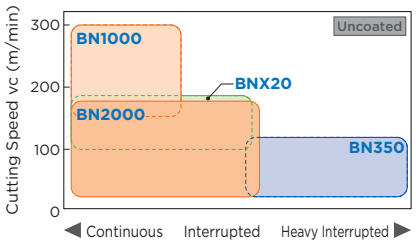
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details ☞ L32, L33

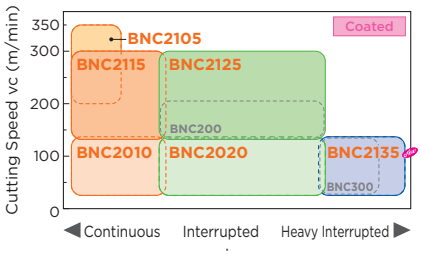
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

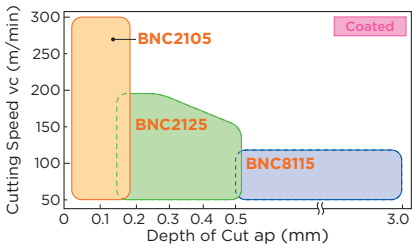
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



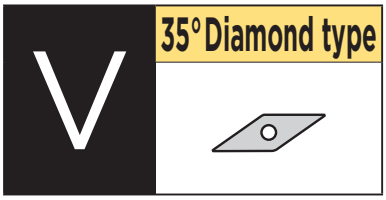
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



VBGW1604 ● ● Coated

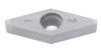
Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application											
K	Cast Iron									●	✱
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✱	○	◔				
	Sintered Components										

Applicable Boring Bars ☞ E14, E48, E50, E53, E56

Multi-Cornered One-Use type / 5° Positive (With Hole)

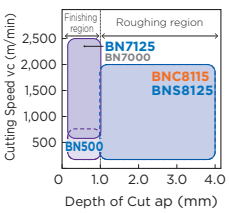
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	2NC-VBGW 160402	1	2	0.2	3.8		●	●		●	●				—
		160404			0.4	3.3	●	●	●	●	●	●			●	—
		160408			0.8	2.4	●	●	●	●	●	●			●	—
	L Low Resistance E With Honing	2NC-VBGW 160402LE	1	2	0.2	3.8	—	—	—	—	●	—	—	—	—	—
		160404LE			0.4	3.3	—	—	—	—	●	—	—	—	—	—
		160408LE			0.8	2.4	—	—	—	—	●	—	—	—	—	—
	L Low Resistance T Negative Land	2NC-VBGW 160402LT	1	2	0.2	3.8	—	—	—	—	—	●	—	—	—	—
		160404LT			0.4	3.3	—	—	—	—	—	●	—	—	—	—
		160408LT			0.8	2.4	—	—	—	—	—	●	—	—	—	—
	L Low Resistance S Negative Land With Honing	2NC-VBGW 160402LS	1	2	0.2	3.8		●	●		—	—			—	—
		160404LS			0.4	3.3	●	●	●		—	—			—	—
		160408LS			0.8	2.4	●	●	●		—	—			—	—
	H Strong Edge S Negative Land With Honing	2NC-VBGW 160404HS New	1	2	0.4	3.3				●						—
		160408HS New			0.8	2.4				●						—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

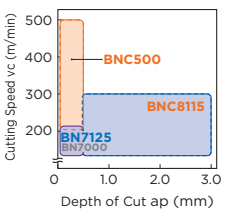
Cutting Edge Specification Details ☞ L32, L33

SUMIBORON Application Range Map

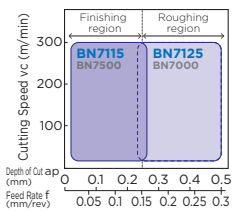
K Grey Cast Iron



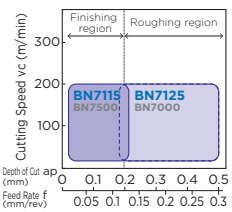
K Ductile Cast Iron



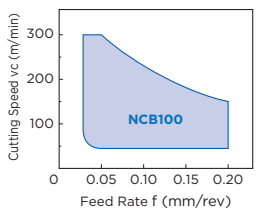
Sintered Alloy General Sintered Alloy

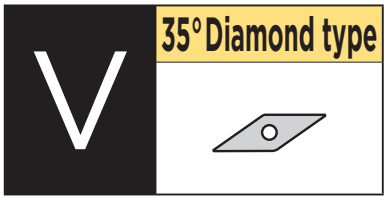


Sintered Alloy High-density Sintered Alloy



S Titanium Alloy





Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✖	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✖							
	Sintered Components							◕		●			

VCGW0802●● Uncoated

Dimensions (mm)				
	Inscribed Circle	4.76	Hole Dia.	2.3
	Thickness	2.38		

Applicable Boring Bars ☞E49, E52, E55, E58

One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-VCGW 080202**	1	1	0.2	3.2				●							—	
		080204			0.4	2.8				●							—	
		080208			0.8	2.0				●							—	
	L Low Resistance T Negative Land	**NU-VCGW 080202LT**	1	1	0.2	3.3	—		—	●	—	—	—	—	—	—	—	—
		080204LT			0.4	2.8	—		—	●	—	—	—	—	—	—	—	—
		080208LT			0.8	2.0	—		—	●	—	—	—	—	—	—	—	—
	H Strong Edge S Negative Land With Honing	**NU-VCGW 080204HS**	1	1	0.4	2.8	—	—	—	●	—	—					—	—
		080208HS			0.8	2.0	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
*Depth of cut for one-use types is 0.5mm or less.

Cutting Edge Specification Details ☞L32, L33

VCGW0802●● Coated

Dimensions (mm)				
	Inscribed Circle	4.76	Hole Dia.	2.3
	Thickness	2.38		

Applicable Boring Bars ☞E49, E52, E55, E58

Recommended Application		Coated SUMIBORON									
		BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
K	Cast Iron									●	✖
S	Exotic Alloy										
H	Hardened Steel	○	●	◕	✖	○	◔				
	Sintered Components										

Multi-Cornered One-Use type / 5° Positive (With Hole)

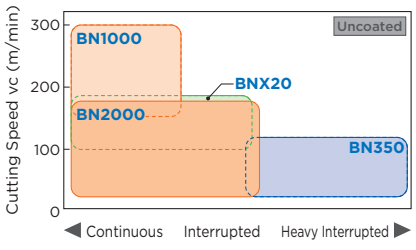
Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**2NC-VCGW 080202**	1	2	0.2	3.2					●	●				—
		080204			0.4	2.8					●	●				—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

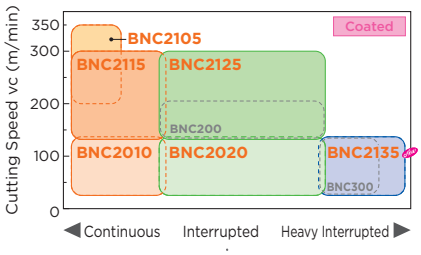
Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

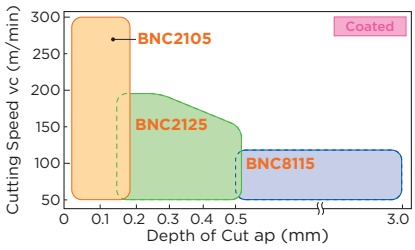
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel

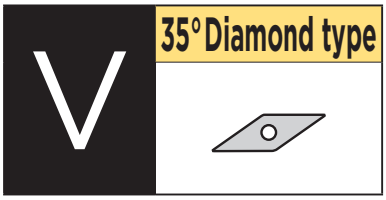


H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)





VCGW1103 Uncoated

Dimensions (mm)				
	Inscribed Circle	6.35	Hole Dia.	2.8
	Thickness	3.18		

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✱	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

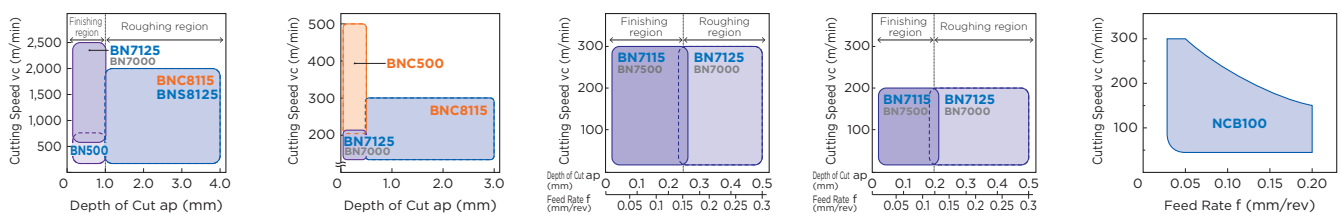
Applicable External Holders C40, C41, D28, D40 | Applicable Boring Bars E52, E55, E58

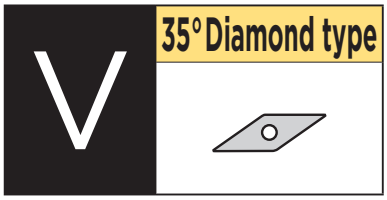
One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-VCGW 110302**	1	1	0.2	3.2			●	●							—	
		110304			0.4	2.8			●	●							—	
	H Strong Edge S Negative Land With Honing	**NU-VCGW 110302HS**	1	1	0.2	3.2	—	—	—	●	—	—					—	—
		110304HS			0.4	2.8	—	—	—	●	—	—					—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map





Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation, 2nd Recommendation; General Machining: 1st Recommendation, 2nd Recommendation; Interrupted Cutting: 1st Recommendation, 2nd Recommendation

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				◕	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	◕							
	Sintered Components							◕		●			

VC■■1604●● Uncoated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

Applicable External Holders C40, C41
Applicable Boring Bars E52, E55

One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-VCGW 160404**	1		0.4	3.2*1								▲			—	●
		160408	1.9	1	0.8	2.3*2											—	●

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.
*1: NCB100 cutting edge length is 2.5.
*2: NCB100 cutting edge length is 1.6.

Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**2NU-VCGW 160404**	1	2	0.4	3.2							●				—	

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

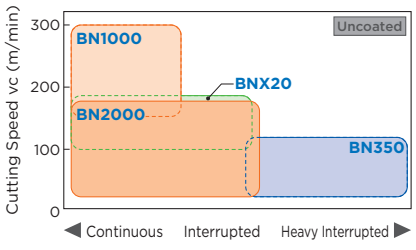
7° Positive type (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**VCMW 160404**	1	1	0.4	5.2		●									—	—
		160408			0.8	4.3		●				●					—	—

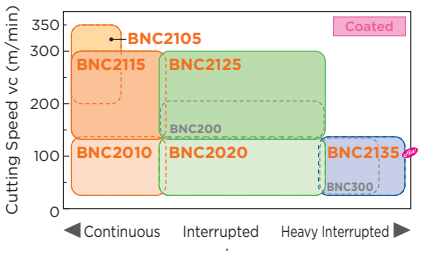
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

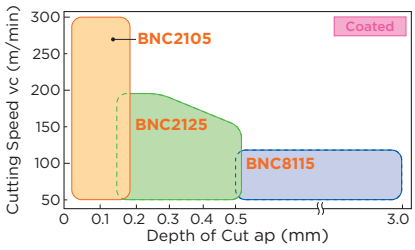
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



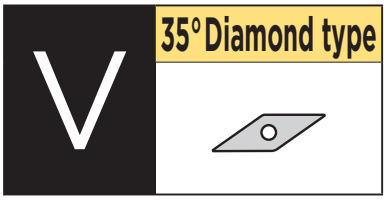
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



VCGW1604●● Coated

Dimensions (mm)				
	Inscribed Circle	9.525	Hole Dia.	4.4
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application		
K	Cast Iron	● ✱
S	Exotic Alloy	
H	Hardened Steel	○ ● ◕ ✱ ○ ◔
	Sintered Components	

Applicable External Holders C40, C41 | Applicable Boring Bars E52, E55

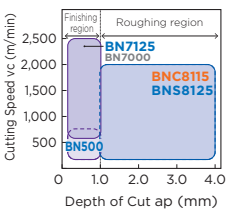
Multi-Cornered One-Use type / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	**2NC-VCGW 160404**	1	2	0.4	3.2	●	●	●		●	●	▲			—
		160408			0.8	2.3	●	●	●		●	●	▲			—
	L Low Resistance S Negative Land With Honing	**2NC-VCGW 160404LS**	1	2	0.4	3.2	●	●	●		—	—	▲		—	—
		160408LS			0.8	2.3	●	●	●		—	—	▲		—	—
	H Strong Edge S Negative Land With Honing	**2NC-VCGW 160404HS**	1	2	0.4	3.2			●		●	●	▲			—
		160408HS			0.8	2.3			●		●	●	▲			—

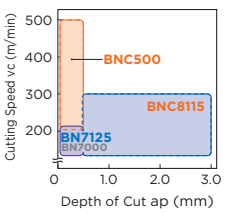
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

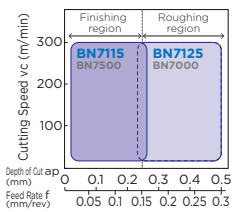
K Grey Cast Iron



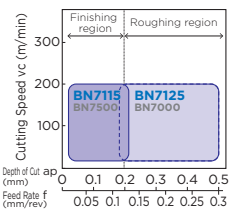
K Ductile Cast Iron



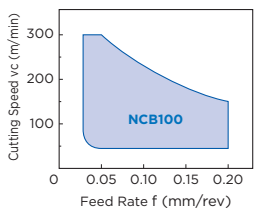
General Sintered Alloy



High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

W Trigon type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

(Legend) Continuous Cutting: 1st Recommendation / 2nd Recommendation; General Machining: 1st Recommendation / 2nd Recommendation; Interrupted Cutting: 1st Recommendation / 2nd Recommendation

Recommended Application		Uncoated SUMIBORON									BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◕				✖	
S	Exotic Alloy							●				◕	●
H	Hardened Steel	○	◔	●	◕	✖							
	Sintered Components							◕		●			

WNMA0804●● Uncoated

Dimensions (mm)				
	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

Applicable External Holders ☞C42, C43 Applicable Boring Bars ☞ E62, E63

One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**NU-WNMA 080404**	1	1	0.4	2.5				●							—	—
		080408			0.8	2.4				●							—	—

Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33

*Depth of cut for one-use types is 0.5mm or less.

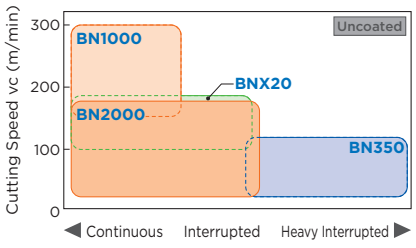
Negative type (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	Standard	**WNMA 080404**	1	1	0.4	4.5		●									—	—
		080408			0.8	4.4		●									—	—
		080412			1.2	4.3											—	—

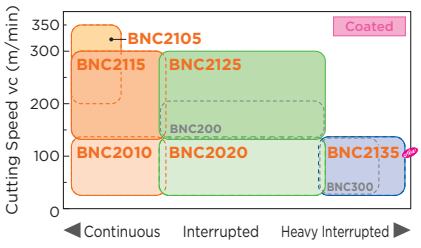
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details ☞L32, L33

SUMIBORON Application Range Map

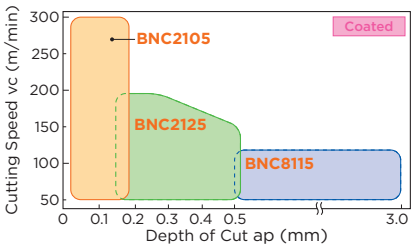
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



W Trigon type

WNGA0804●● Coated

Dimensions (mm)	Inscribed Circle	12.7	Hole Dia.	5.16
	Thickness	4.76		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation; General Machining ◕ 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application										
K Cast Iron									●	✱
S Exotic Alloy										
H Hardened Steel	○	●	◕	✱	○	◔				
Sintered Components										

Applicable External Holders C42, C43 Applicable Boring Bars E62, E63

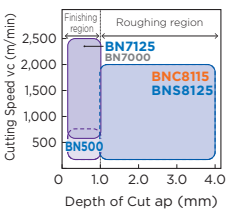
Multi-Cornered One-Use type / Negative (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Coated SUMIBORON: BNC2105	BNC2115	BNC2125	BNC2135	BNC2010	BNC2020	BNC200	BNC300	BNC500	BNC8115
	Standard	6NC-WNGA 080404	1	6	0.4	2.4		●	●		●	●				—
		6NC-WNGA 080408			0.8	2.3	●	●	●		●	●	▲			—
		6NC-WNGA 080412			1.2	2.2		●	●		●	●				—
	Low Feed Wiper Insert	6NC-WNGA 080408WG	1	6	0.8	2.2		●	●		●	●	▲			—
	High Feed Wiper Insert	6NC-WNGA 080408WH	1	6	0.8	2.3		●	●		●	●	▲			—
	L Low Resistance T Negative Land	3NC-WNGA 080408LT	1	3	0.8	2.3	—	—	—	—	—	●	—	—	—	—
	L Low Resistance S Negative Land With Honing	3NC-WNGA 080408LS	1	3	0.8	2.3	●	●	●		—	—			—	—
	L Low Resistance S Negative Land With Honing	6NC-WNGA 080408LS	1	6	0.8	2.3	—	—	—		—	—	▲		—	—
	H Strong Edge S Negative Land With Honing	6NC-WNGA 080408HS	1	6	0.8	2.3		●	●		●	●	▲			—

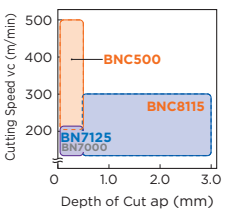
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible. Cutting Edge Specification Details L32, L33

SUMIBORON Application Range Map

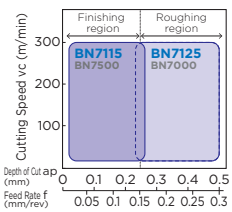
K Grey Cast Iron



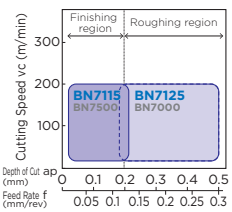
K Ductile Cast Iron



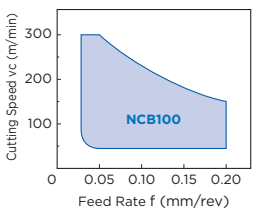
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy



S Titanium Alloy



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

W Trigon type

Standard cutting edge specification

	BNX10	BNX20	BN1000 BN2000	BN350	BNC2105 BNC2115	BNC2125 BNC2135	BNC2010 BNC2020	BNC200 BNC300
Negative	T01225	S01225	S01225	T01225	S01225	S01225	S01225	S01225
Positive				T01235				

	BNC500	BN500	BN7125	BN7000	BN7115	BN7500	BNC8115	BNS8125	NCB100
Negative	S01215	T01215	T01215	T01215	T01215	T01215	S02020	T02020	T01215
Positive							—	—	

WBEW0601●● Uncoated

Dimensions (mm)	Inscribed Circle	3.97	Hole Dia.	2.2
	Thickness	1.59		

(Legend) Continuous Cutting: ● 1st Recommendation ○ 2nd Recommendation; General Machining: ● 1st Recommendation ◔ 2nd Recommendation; Interrupted Cutting: ✖ 1st Recommendation ✱ 2nd Recommendation

Recommended Application		Uncoated SUMIBORON										BINDERLESS SUMIBORON
		BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
K	Cast Iron						○	◔				✖	
S	Exotic Alloy							●				◔	●
H	Hardened Steel	○	◔	●	◔	✖							
	Sintered Components							◔		●			

Applicable Boring Bars E60

One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	NCB100
	L Low Resistance F Sharp Edge	**NU-WBEW 060102L-LF**	1	1	0.2	1.3	—	—	—	—	—	—	●	▲			—	—
		060104L-LF			0.4	1.2	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**NU-WBEW 060102L-LT**	1	1	0.2	1.3	—	●	—	—	—	—	—	—	—	—	—	—
		060104L-LT			0.4	1.2	—	●	—	—	—	—	—	—	—	—	—	—

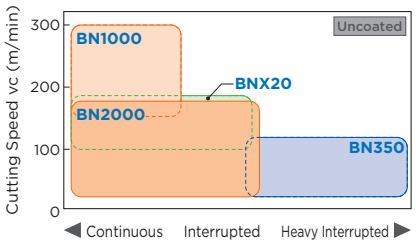
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.

Cutting Edge Specification Details L32, L33

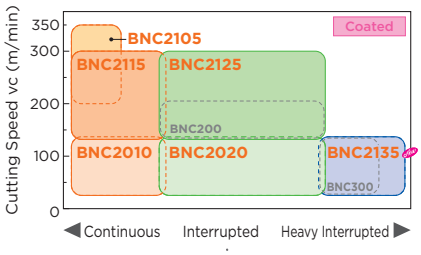
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

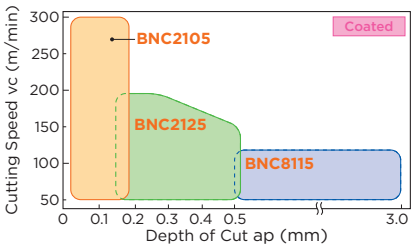
H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Induction Hardened Steel (S45C/S55C, etc.), Carburised Steel



H Bearing Steel (SUJ2, etc.)



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

W Trigon type

WBEW0802●● Uncoated

Dimensions (mm)	Inscribed Circle	4.76	Hole Dia.	2.2
	Thickness	2.38		

(Legend) Continuous Cutting ● 1st Recommendation ○ 2nd Recommendation / General Machining ◕ 1st Recommendation ◔ 2nd Recommendation / Interrupted Cutting ✱ 1st Recommendation ✲ 2nd Recommendation

Recommended Application													
	K Cast Iron						○	◕				✱	
	S Exotic Alloy							●				◕	●
	H Hardened Steel	○	◔	●	◕	✱							
	Sintered Components							◕		●			

Applicable Boring Bars E60

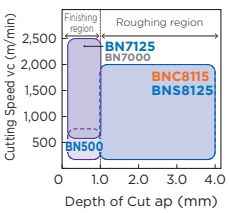
One-Use type / 5° Positive (With Hole)

Shape	Cutting Edge Specification	Cat. No.	Pcs/ Pack	No. of Cutting Edges	Corner Radius	Cutting Edge Length	Uncoated SUMIBORON: BNX10	BNX20	BN1000	BN2000	BN350	BN500	BN7125	BN7000	BN7115	BN7500	BNS8125	BINDERLESS SUMIBORON: NCB100
	L Low Resistance F Sharp Edge	**NU-WBEW 080202L-LF**	1	1	0.2	1.7	—	—	—	—	—	—					—	—
		080204L-LF			0.4	1.6	—	—	—	—	—	—					—	—
	L Low Resistance T Negative Land	**NU-WBEW 080202L-LT**	1	1	0.2	1.7	—	●	—	—	—	—	—	—	—	—	—	—
		080204L-LT			0.4	1.6	—	●	—	—	—	—	—	—	—	—	—	—

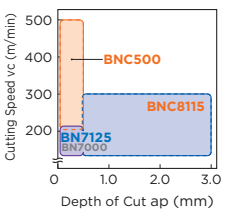
Cutting edge treatment differs by grade. Regarding cutting edge specifications not stated above, please contact us to confirm whether manufacturing is possible.
Cutting Edge Specification Details L32, L33
*Depth of cut for one-use types is 0.5mm or less.

SUMIBORON Application Range Map

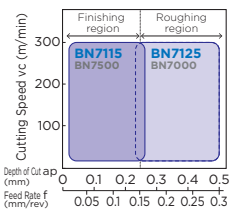
K Grey Cast Iron



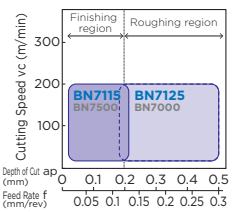
K Ductile Cast Iron



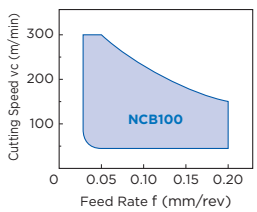
Sintered Alloy General Sintered Alloy



Sintered Alloy High-density Sintered Alloy

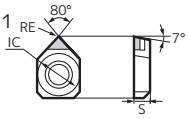


S Titanium Alloy



Turning Inserts

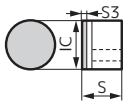
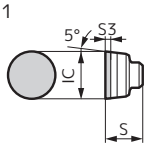
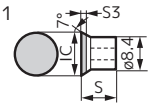
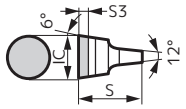
Dimensions (mm)

Shape		Cat. No.	BN1000	BN2000	BNX20	BN350	BNX10	BN500	BN7125	BN7000	Inscribed Circle IC	Thickness S	Corner Radius RE	Hole Dia.	Applicable Holder	Fig
	Fig 1 	**NU-ZNEX 040102**	●	●					●	●	4.76	1.59	0.2	2.3	SUMIBORON Small Diameter Boring Bars (BNZ series) → L137	1
		NU-ZNEX 040104	●	●					●	●	4.76	1.59	0.4	2.3		1
		T-NU-ZNEX 040102		●							4.76	1.59	0.2	2.3		1
		T-NU-ZNEX 040104		●							4.76	1.59	0.4	2.3		1

*Use NS type (NS-ZNEX) for BNX25.
*T-NU-ZNEX is a 10-piece pack.

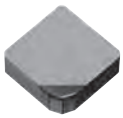
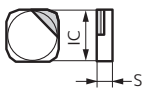
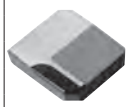
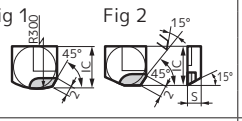
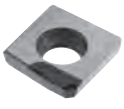
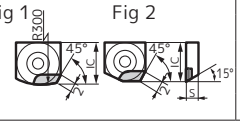
Round Inserts

Dimensions (mm)

Shape		Cat. No.	BN1000	BN2000	BNX20	BN350	BNX10	BN500	BN7125	BN7000	Inscribed Circle IC	Thickness S	Thickness of CBN S3	Applicable Holder	Fig
	Fig 1 	**RNGA 0906M0**		●	●						9.00	6.35	0.80	SUMIBORON Round Insert Holders (PRGN type) → L140	1
	Fig 1 	**RBG 08-B**							●	●	8.00	6.50	0.80	SUMIBORON Tool Holder for Roll Turning (BNRN series) → L141	1
		RBG 10-B							●	●	10.00	9.00	0.80		1
		RBG 12-B							●	●	12.00	11.00	0.80		1
		RBG 16-B							●	●	16.00	13.00	0.80		1
		RBG 20-B							●	●	20.00	15.00	0.80		1
		RBG 26-B							●	●	26.00	15.00	0.80		1
	Fig 1 	**RCGA 0906M0**		●							9.00	6.35	0.80	SUMIBORON Round Insert Holders (PRGC type / PRDC type) →L140	1
	Fig 1 	**RTGN 0508M0**			●						5.00	7.50	0.80	SUMIBORON Small Diameter Round Insert Holders (TRGT series) → L139	1
		RTGN 0608M0			●						6.00	7.50	0.80		1
		RTGN 0711M0			●						7.00	11.0	0.80		1
		RTGN 0811M0			●						8.00	11.0	0.80		1
		RTGN 0914M0			●						9.00	14.0	0.80		1
		RTGN 1014M0			●						10.00	14.0	0.80		1
		RTGN 1214M0			●						12.00	14.0	0.80		1

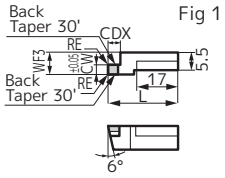
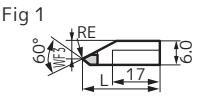
Milling Inserts

Dimensions (mm)

Shape		Cat. No.	BN1000	BN2000	BN7125	BN7000	Inscribed Circle IC	Thickness S	Applicable Holder	Fig
	Fig 1 	**CSN 43MT**		●			12.70	4.76	SEC-ACE MILL (DNF series) → H45	1
	Fig 1 Fig 2 	**SNEN 1504ADTR**			●	●	15.875	4.76	BN Finish Mill (FM series, FMF series) → L146	1
		SNEN 1504ADTL			●	●	15.875	4.76		1
		SNEN 1504ADTR-S			●	●	15.875	4.76		2
		SNEN 1504ADTL-S			●	●	15.875	4.76		2
	Fig 1 Fig 2 	**SNEW 1203ADTR**			●	●	12.70	3.18	BN Finish Mill EASY (FMU series) → L145	1
		SNEW 1203ADTR-S			●	●	12.70	3.18		2

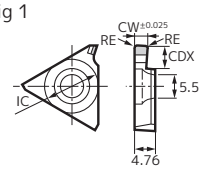
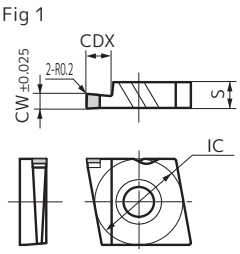
Grooving/Threading Tool Inserts

Dimensions (mm)

Shape (Right-Hand)		Cat. No.	BN2000 R	BN2000 L	BNX20 R	BNX20 L	BN350 R	BN350 L	Groove width CW	Groove depth CDX	Corner Radius RE	Overall Length L	Cutting Edge Distance WF3	Applicable Holder	Fig
	 Fig 1	**BNGNT 0200 R/L**	●				●		2.0	4.0	0.2	25	6.0		1
		BNGNT 0250 R/L	●				●		2.5	4.0	0.2	25	6.0		1
		BNGNT 0300 R/L	●				●		3.0	5.0	0.4	25	6.0	SUMIBORON	1
		BNGNT 0400 R/L	●				●		4.0	6.0	0.4	26	6.0	Grooving Tool	1
		BNGNT 0500 R/L	●				●		5.0	6.0	0.4	26	6.0	(BNGG series)	1
		BNGNT 0600 R/L	●				●		6.0	7.0	0.4	27	6.0	→ L143	1
	 Fig 1	**BNTT 1020 R/L**	●						Pitch = 1.0 to 2.0		0.14	25	4.0	SUMIBORON	1
		BNTT 1530 R/L	●						Pitch = 1.5 to 3.0		0.20	25	4.0	Grooving Tool (BNGG series) → L143	1

Inserts for Grooving Tool Holders

Dimensions (mm)

Shape		Cat. No.	BN2000 R	BN2000 L	BNC30G R	BNC30G L	Inscribed Circle IC	Width of Cut CW	Corner Radius RE	Groove depth CDX	Hole Dia.	Applicable Holder	Fig
	 Fig 1	**TGA R/L4125**	●		—	—	12.70	1.25	0.2	2.0	5.5	SEC-	1
		TGA R/L4150	●		—	—	12.70	1.50	0.2	3.5	5.5	Grooving Tool	1
		TGA R/L4200	●		—	—	12.70	2.00	0.2	3.5	5.5	(GWC series,	1
		TGA R/L4250	●		—	—	12.70	2.50	0.2	4.0	5.5	GWCS type,	1
		TGA R/L4300	●		—	—	12.70	3.00	0.2	4.0	5.5	GWCI type)	1
		TGA R/L4350	●		—	—	12.70	3.50	0.2	5.0	5.5		1
		TGA R/L4400	●		—	—	12.70	4.00	0.2	5.0	5.5	→F4 to F5	1
	 Fig 1	**CGA R/L 1504150**	●	●	●	●	15.875	1.5	0.2	3.5	5.5		1
		CGA R/L 1504200	●	●	●	●	15.875	2.0	0.2	3.5	5.5		1
		CGA R/L 1504250	●	●	●	●	15.875	2.5	0.2	4.0	5.5		1
		CGA R/L 1504300	●	●	●	●	15.875	3.0	0.2	4.0	5.5	SUMIBORON	1
		CGA R/L 1504350	●	●	●	●	15.875	3.5	0.2	5.0	5.5	Grooving Tool	1
		CGA R/L 1504400	●	●	●	●	15.875	4.0	0.2	5.0	5.5	(GWB series)	1
		CGA R/L 1504450	●	●	●	●	15.875	4.5	0.2	5.0	5.5	→ L142	1
		CGA R/L 1506500	●	●	●	●	15.875	5.0	0.2	5.0	5.5		1
		CGA R/L 1506550	●	●	●	●	15.875	5.5	0.2	5.0	5.5		1
		CGA R/L 1506600	●	●	●	●	15.875	6.0	0.2	5.0	5.5		1

● mark: Standard stocked item (new product/expanded item)

Solid SUMIBORON

Indexable Inserts (Solid CBN type)

Refer to pages L124 to L127 for solid SUMIBORON dedicated holders.

Applications K Cast Iron H Hardened Steel

Shape	Cat. No.	BNC8115	BNS8125	Dimensions (mm) Inscribed Circle	Thickness	Corner Radius	Hole	Applicable Holder
80° Diamond type	CNGN 090308	●	●	9.525	3.18	0.8	No	External Dia. L125
	CNGN 090308LF			9.525	3.18	0.8	No	
	CNGN 090312	●	●	9.525	3.18	1.2	No	
	CNGN 090312LF			9.525	3.18	1.2	No	
	CNGN 120408	●	●	12.70	4.76	0.8	No	External Dia. L125
	CNGN 120412	●	●	12.70	4.76	1.2	No	
	CNGN 120416	●	●	12.70	4.76	1.6	No	
	CNGA 120408	●	●	12.70	4.76	0.8	Yes	External Dia. C10 to C12; Internal Dia. E15, E23 to E25
	CNGA 120412	●	●	12.70	4.76	1.2	Yes	
	CNGX 120408			12.70	4.76	0.8	Dimple	External Dia. L127
	CNGX 120412	●	●	12.70	4.76	1.2	Dimple	
	CNGX 120416	●	●	12.70	4.76	1.6	Dimple	
55° Diamond type	DNGN 110308	●	●	9.525	3.18	0.8	No	External Dia. L125
	DNGN 110308LF			9.525	3.18	0.8	No	
	DNGN 110312	●	●	9.525	3.18	1.2	No	
	DNGN 110312LF			9.525	3.18	1.2	No	
Round type	RNGN 090300	●	●	9.525	3.18	—	No	External Dia. L126
	RNGN 090300LF			9.525	3.18	—	No	
	RNGN 120300	●	●	12.70	3.18	—	No	External Dia. L126
	RNGN 120300LF			12.70	3.18	—	No	
	RNGN 120400	●	●	12.70	4.76	—	No	
Square type	SNGN 090308	●	●	9.525	3.18	0.8	No	External Dia. L124; Milling Cutters H251 L147
	SNGN 090308LF			9.525	3.18	0.8	No	
	SNEN 090308W	●	●	9.525	3.18	0.8	No	
	SNEN 090308LFW			9.525	3.18	0.8	No	
	SNGN 090312	●	●	9.525	3.18	1.2	No	
	SNGN 090312LF			9.525	3.18	1.2	No	
	SNGN 120308	●	●	12.70	3.18	0.8	No	External Dia. L124
	SNGN 120308LF			12.70	3.18	0.8	No	
	SNGN 120312	●	●	12.70	3.18	1.2	No	
	SNGN 120312LF			12.70	3.18	1.2	No	
	SNGN 120408	●	●	12.70	4.76	0.8	No	External Dia. L124
	SNGN 120412	●	●	12.70	4.76	1.2	No	
	SNGN 120416	●	●	12.70	4.76	1.6	No	
	SNGN 120420	●	●	12.70	4.76	2.0	No	
	SNGA 120408	●	●	12.70	4.76	0.8	Yes	External Dia. C20 to C26; Internal Dia. E37 to E39
	SNGA 120412	●	●	12.70	4.76	1.2	Yes	
	SNGX 120408			12.70	4.76	0.8	Dimple	External Dia. L127
	SNGX 120412	●	●	12.70	4.76	1.2	Dimple	
	SNGX 120416	●	●	12.70	4.76	1.6	Dimple	
Triangular type	TNGN 110308	●	●	6.35	3.18	0.8	No	External Dia. L124
	TNGN 110308LF			6.35	3.18	0.8	No	
	TNGN 110312	●	●	6.35	3.18	1.2	No	
	TNGN 110312LF			6.35	3.18	1.2	No	
	TNGN 160408	●	●	9.525	4.76	0.8	No	External Dia. L124
	TNGN 160412	●	●	9.525	4.76	1.2	No	
	TNGN 160416	●	●	9.525	4.76	1.6	No	
	TNGN 160420	●	●	9.525	4.76	2.0	No	
	TNGA 160408	●	●	9.525	4.76	0.8	Yes	External Dia. C29 to C35; External Dia. D41 D29; Internal Dia. E15, E45 to E47
	TNGA 160412	●	●	9.525	4.76	1.2	Yes	

*Part number suffix: LF: Sharp edged W: Wiper type LFW: Wiper sharp edged

MEMO

Tool Holders for Solid SUMIBORON

S 90° 75°

General Turning
Clamp-on

CSBN/FN11
External Turning

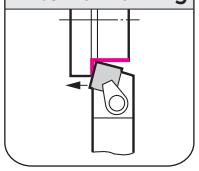


Fig 1

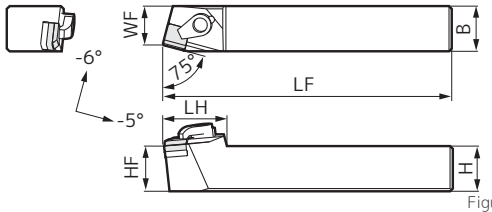


Fig 2

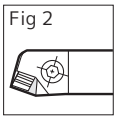
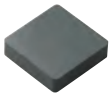


Figure shows right-handed (R) tool.

Insert L122



(1) SNGN090300
(2) SNGN120300
(3) SNGN120400

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Plate	Chipbreaker	Double Screw	Bolt	Shim	Shim Retainer	Spring	Wrench
CSBN R/L2525-32	●		25	25	160	21.5	25	30	SNGN090300	1	CCM8UL	CBS13	WB8-22T	—	SSN0903	SPP3	—	LT27
R/L2525-42	●		25	25	160	21.5	25	35	SNGN120300	1		CBS14			SSND423			
FN11 R/L-44A	●	●	25	25	160	21.5	25	33	SNGN120400	2	DCR/L1	CBD4R/L	—	BH0830R/L			DSP5	LH040

S 90° 75°

Facing
Clamp-on

CSKN
Facing

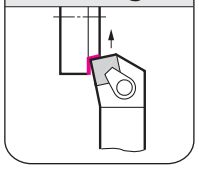


Fig 1

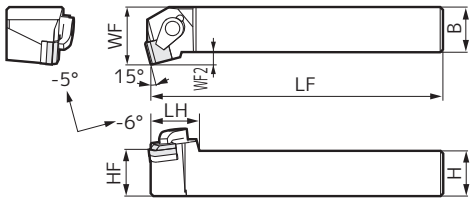
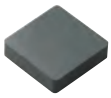


Figure shows right-handed (R) tool.

Insert L122



(1) SNGN090300
(2) SNGN120300

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert	Fig	Clamp Plate	Chipbreaker	Double Screw	Shim	Shim Retainer	Wrench
CSKN R/L2525-32	●		25	25	160	32	25	25	7	SNGN090300	1	CCM8UL	CBS13	WB8-22T	SSN0903	SPP3	LT27
R/L2525-42	●		25	25	160	32	25	25	7	SNGN120300	1		CBS14		SSND423		

T 60° 91°

General Turning
Clamp-on

CTGN/FN21
External Turning

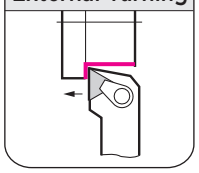


Fig 1

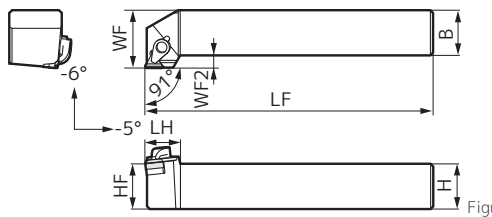


Fig 2

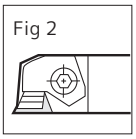


Figure shows right-handed (R) tool.

Insert L122

(1) TNGN110300
(2) TNGN160400

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert	Fig	Clamp Plate	Chipbreaker	Double Screw	Bolt	Shim	Shim Retainer	Spring	Wrench
CTGN R/L2525-22	●		25	25	160	32	25	20	7	TNGN110300	1	CCM6UL	CBT12	WB6-16T	—	STN1103	SPP3	—	LT20
FN21 R/L-44A	●	●	25	25	160	25	25	32	—	TNGN160400	2	DCR/L2	CBD4R/L	—	BH0830R/L	STND323		DSP5	LH040

Tool Holders for Solid SUMIBORON

General Turning and Facing
Clamp-on

CCLN/FCLN
External Turning/Facing

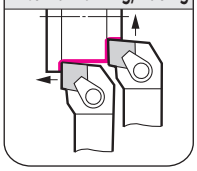


Fig 1

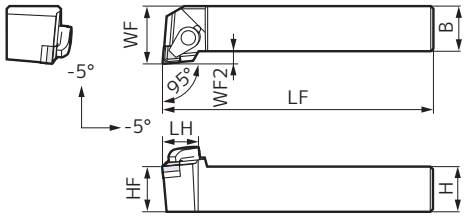


Fig 2

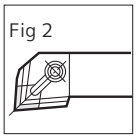
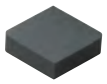


Figure shows right-handed (R) tool.

Insert L122



(1) CNGN0903OO
(2) CNGN1204OO

Holder

Parts

Dimensions (mm)

Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Offset	Applicable Insert	Fig	Clamp Plate	Chipbreaker	Double Screw	Shim	Shim Retainer	Wrench
	R	L	H	B	LF	WF	HF	LH	WF2								
CCLN R/L2525-32	●		25	25	150	32	25	25	7	CNGN0903OO	1	CCM8UL	CBC0903	WB8-22T	SCN0903	SPP3	LT27
FCLN R/L2525-43	●	●	25	25	150	32	25	30	7	CNGN1204OO	2	CCM8-LONG	CBC4	WB8-30	SCND433		LH040

General Turning and Profiling
Clamp-on

CDJN
External Turning/Profiling

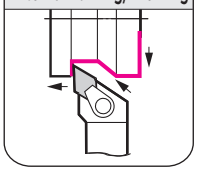


Fig 1

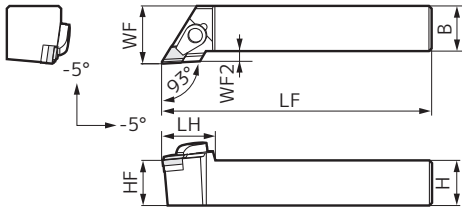
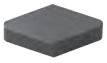


Figure shows right-handed (R) tool.

Insert L122



(1) DNGN1103OO

Holder

Parts

Dimensions (mm)

Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Offset	Applicable Insert	Fig	Clamp Plate	Chipbreaker	Double Screw	Shim	Shim Retainer	Wrench
	R	L	H	B	LF	WF	HF	LH	WF2								
CDJN R/L2525-32	●		25	25	150	32	25	30	7	DNGN1103OO	1	CCM8UL	CBD1103	WB8-22T	SDN1103	SPP3	LT27

Tool Holders for Solid SUMIBORON

R

General Turning and Profiling
Clamp-on

CRDN
External Turning/Profiling

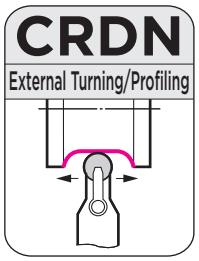
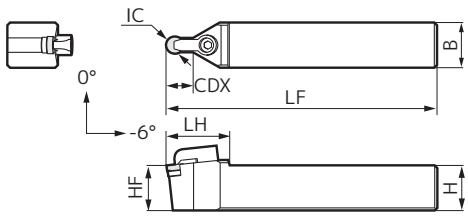


Fig 1



Insert L122

(1) RNGN090300
(2) RNGN120300
(3) RNGN120400

Holder

Parts

Dimensions (mm)

Cat. No.	Stock	Inscribed Circle IC	Height H	Width B	Overall Length LF	Cutting Edge Height HF	Head LH	Depth of Cut CDX	Applicable Insert	Fig	Clamp Plate	Double Screw	Shim	Shim Retainer	Wrench
CRDN N2525-32	●	9.525	25	25	150	25	35	15	RNGN090300	1	CCM8-LONG	WB8-22T	SRND32	SPP3	LT27
N2525-42	●	12.7	25	25	150	25	35	20	RNGN120300	1			SRND42		
N2525-43	●	12.7	25	25	150	25	35	20	RNGN120400	1					

R

General Turning and Facing
Clamp-on

CRSN
External Turning/Facing

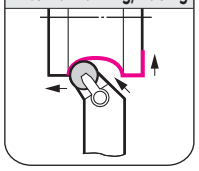


Fig 1

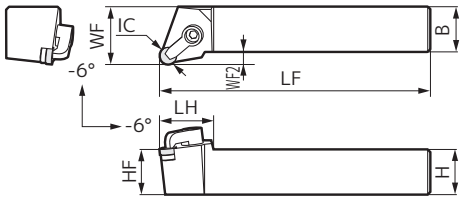


Figure shows right-handed (R) tool.

Insert L122

(1) RNGN090300
(2) RNGN120300
(3) RNGN120400

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Inscribed Circle IC	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert	Fig	Clamp Plate	Double Screw	Shim	Shim Retainer	Wrench
CRSN R/L2525-32	●		9.525	25	25	150	32	25	30	7	RNGN090300	1	CCM8-LONG	WB8-22T	SRND32	SPP3	LT27
R/L2525-42	●		12.7	25	25	150	32	25	30	7	RNGN120300	1			SRND42		
R/L2525-43	●		12.7	25	25	150	32	25	30	7	RNGN120400	1					

Tool Holders for Solid SUMIBORON

General Turning
Dimple Lock

XSBN
External Turning

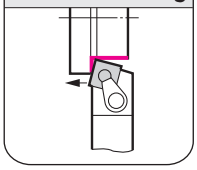


Fig 1

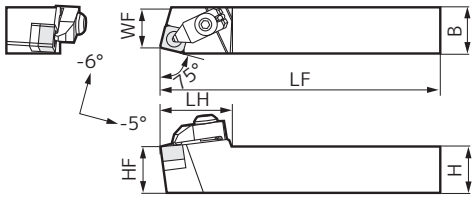


Figure shows right-handed (R) tool.

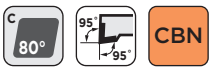
Insert L122

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Plate	Bolt	Shim	Shim Retainer	Spring	Wrench
XSBN R/L2525-43	●		25	25	150	21.5	25	38	SNGX1204OO	1	DSLX8	BH0825	SSND433	SPP3	GSP10	LH050



General Turning and Facing
Dimple Lock

XCLN
External Turning/Facing

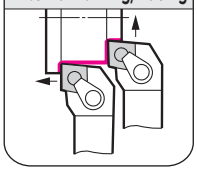


Fig 1

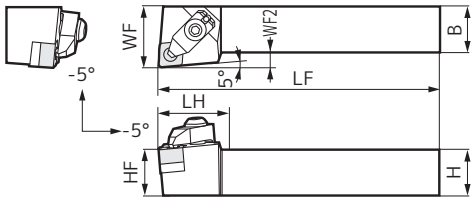


Figure shows right-handed (R) tool.

Insert L122

Holder

Parts

Dimensions (mm)

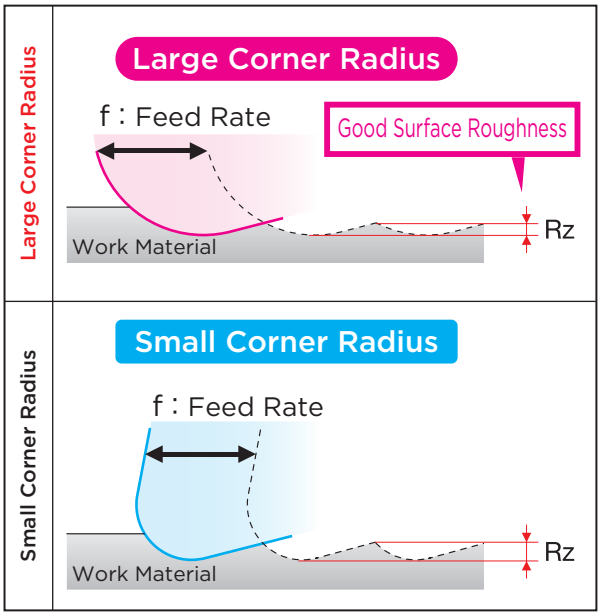
Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert	Fig	Clamp Plate	Bolt	Shim	Shim Retainer	Spring	Wrench
XCLN R/L2525-43	●		25	25	150	32	25	33	7	CNGX1204OO	1	DSLX8	BH0825	SCND433	SPP3	GSP10	LH050

Inserts & Special Holders for High-efficiency Machining

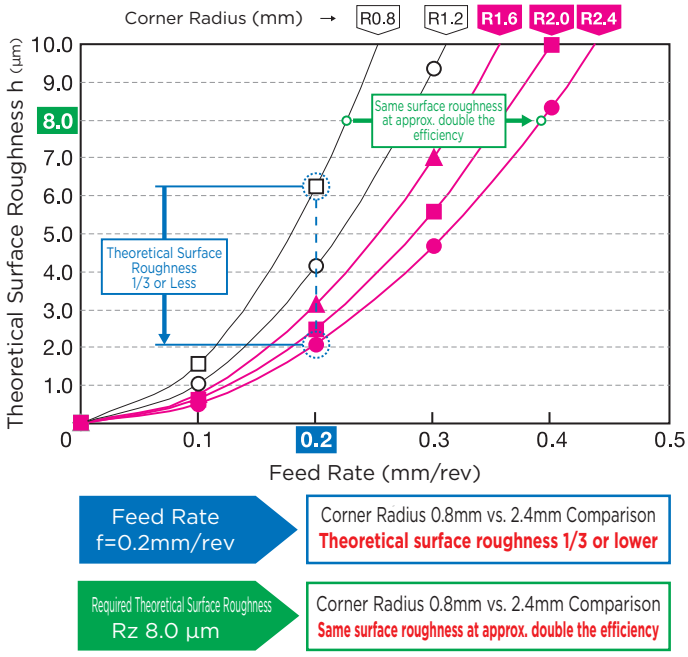
■ Features

- Improved finished surface roughness with high-feed cutting
- Ideal for profiling when surface roughness is required

● Effect of different corner radii

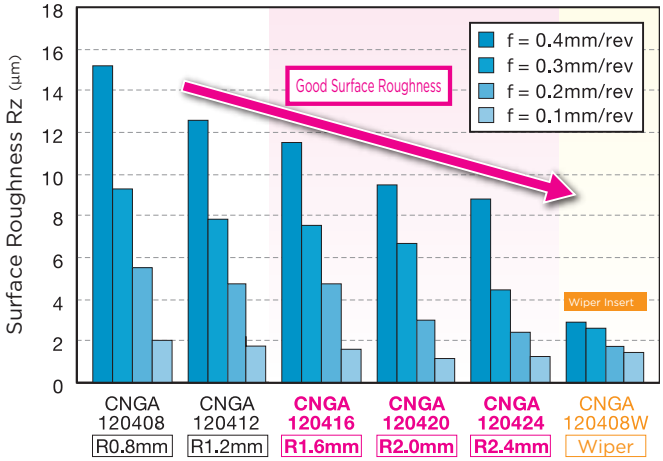


● Comparison of theoretical surface roughness



* Actual value of surface roughness is approximately 1.5 to 3 times higher (for steel)
* Theoretical surface roughness is calculated using the following formula: [h = (f^2 / 8r) x 10^3].

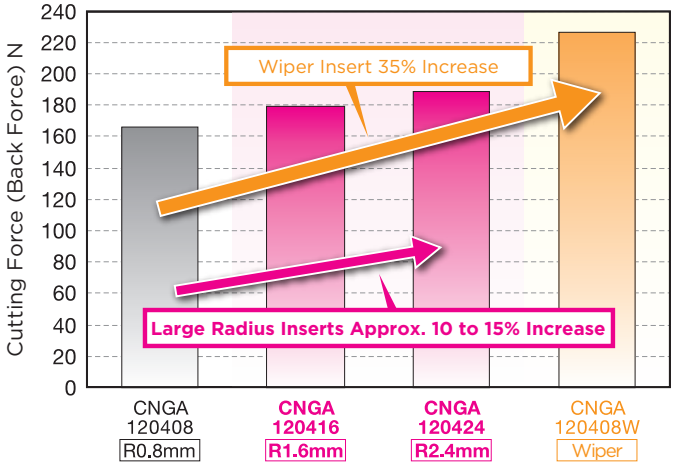
● Machined surface roughness comparison with different corner radii



Inserts with a larger corner radius also give better surface roughness during actual machining

Work Material: SCM415H (60HRC)
Cutting Conditions: vc = 100m/min, ap = 0.1mm, Dry

● Cutting force comparison with different corner radii



Low cutting force compared to wiper insert enables high-feed cutting

Work Material: SCM415H (60HRC)
Cutting Conditions: vc = 150m/min, f = 0.3mm/rev, ap = 0.1mm, Dry

Inserts & Special Holders for High-efficiency Machining

C 80° | 95° | CBN

DCLN
External Turning and Facing

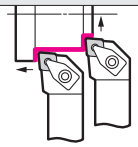


Fig 1

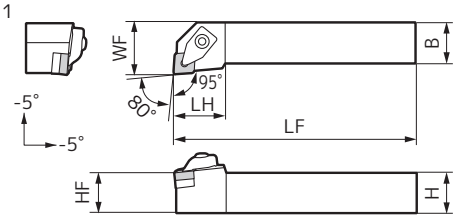


Figure shows right-handed (R) tool.

Insert L131

(1) 2NC-CNGA120416 (4) 4NC-CNGA120416
(2) 2NC-CNGA120420 (5) 4NC-CNGA120420
(3) 2NC-CNGA120424 (6) 4NC-CNGA120424

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
DCLN R/L 2525M12-R24	●	●	25	25	150	32	25	32		1							
R/L 3225P12-R24	●		32	25	170	32	32	32	ONC-CNGA1204OO	1	SCP-2	5.0	CNS1204-R24	BFTX0409N	TRX15 (*1)	LH040	LH025
R/L 3232P12-R24	●		32	32	170	40	32	32		1							

*Dedicated holder for 1.6mm / 2.0mm / 2.4mm corner radius inserts. Other sizes cannot be used.
*1 Wrench for shim is sold separately from the main body.

Clamp Set Parts C48

D 55° | 93° | CBN

DDJN
External/Profiling

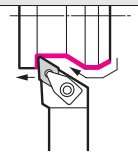


Fig 1

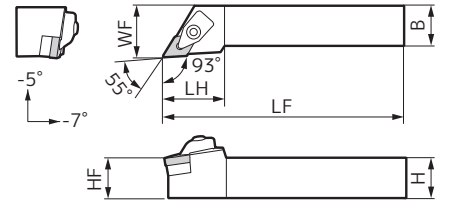


Figure shows right-handed (R) tool.

Insert L131

(1) 2NC-DNGA150416 (4) 4NC-DNGA150416
(2) 2NC-DNGA150420 (5) 4NC-DNGA150420
(3) 2NC-DNGA150424 (6) 4NC-DNGA150424

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
DDJN R/L 2525M15-R24	●	●	25	25	150	32	25	32		1							
R/L 3225P15-R24	●		32	25	170	32	32	38	ONC-DNGA1504OO	1	SCP-2	5.0	DNS1504-R24	BFTX0409N	TRX15 (*1)	LH040	LH025
R/L 3232P15-R24	●		32	32	170	40	32	38		1							

*Dedicated holder for 1.6mm / 2.0mm / 2.4mm corner radius inserts. Other sizes cannot be used.
*1 Wrench for shim is sold separately from the main body.

Clamp Set Parts C48

D 55° | 107.5° | CBN

DDHN
External/Profiling

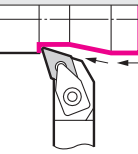


Fig 1

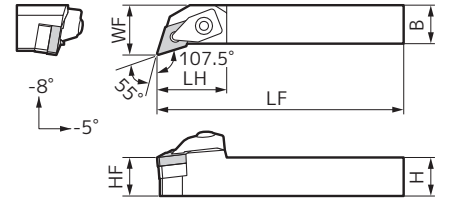


Figure shows right-handed (R) tool.

Insert L131

(1) 2NC-DNGA150416 (4) 4NC-DNGA150416
(2) 2NC-DNGA150420 (5) 4NC-DNGA150420
(3) 2NC-DNGA150424 (6) 4NC-DNGA150424

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
DDHN R/L 2525M15-R24	●	●	25	25	150	35	25	35	ONC-DNGA1504OO	1	SCP-2	5.0	DNS1504-R24	BFTX0409N	TRX15 (*1)	LH040	LH025

*Dedicated holder for 1.6mm / 2.0mm / 2.4mm corner radius inserts. Other sizes cannot be used.
*1 Wrench for shim is sold separately from the main body.

Clamp Set Parts C48

N·m Recommended Tightening Torque (N·m)

Inserts & Special Holders for High-efficiency Machining

D 55° 63° CBN

DDNN
External/Profiling

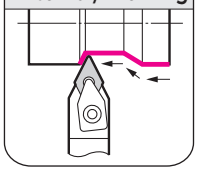


Fig 1

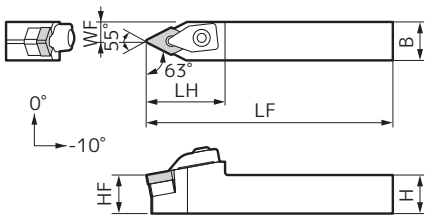


Figure shows right-handed (R) tool.

Insert L131

(1) 2NC-DNGA150416
(2) 2NC-DNGA150420
(3) 2NC-DNGA150424
(4) 4NC-DNGA150416
(5) 4NC-DNGA150420
(6) 4NC-DNGA150424

Holder

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
DDNN N 2525M15-R24	●	25	25	150	13	25	40	ONC-DNGA1504OO	1	SCP-2	5.0	DNS1504-R24	BFTX0409N	TRX15 (*1)	LH040	LH025

*Dedicated holder for 1.6mm / 2.0mm / 2.4mm corner radius inserts. Other sizes cannot be used.
*1 Wrench for shim is sold separately from the main body.

Clamp Set Parts C48

T 60° 91° CBN

DTGN
External Turning

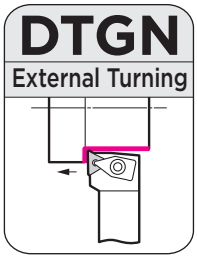


Fig 1

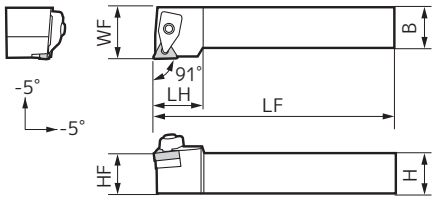


Figure shows right-handed (R) tool.

Insert L131

(1) 3NC-TNGA160416
(2) 3NC-TNGA160420
(3) 3NC-TNGA160424
(4) 6NC-TNGA160416
(5) 6NC-TNGA160420
(6) 6NC-TNGA160424

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
DTGN R/L 2525M16-R24	●	●	25	25	150	32	25	32		1							
R/L 3225P16-R24	●		32	25	170	32	32	32	ONC-TNGA1604OO	1	SCP-1	5.0	TNS1604-R24	BFTX0307N	TRX10 (*1)	LH040	LH025
R/L 3232P16-R24	●		32	32	170	40	32	32		1							

*Dedicated holder for 1.6mm / 2.0mm / 2.4mm corner radius inserts. Other sizes cannot be used.
*1 Wrench for shim is sold separately from the main body.

Clamp Set Parts C48

T 60° 91° CBN

DTFN
Facing

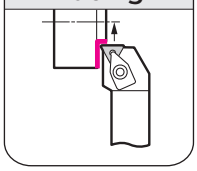


Fig 1

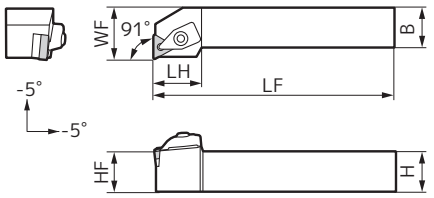


Figure shows right-handed (R) tool.

Insert L131

(1) 3NC-TNGA160416
(2) 3NC-TNGA160420
(3) 3NC-TNGA160424
(4) 6NC-TNGA160416
(5) 6NC-TNGA160420
(6) 6NC-TNGA160424

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shim	Top Hex Wrench	Bottom Hex Wrench
DTFN R/L 2525M16-R24	●	●	25	25	150	32	25	30	ONC-TNGA1604OO	1	SCP-1	5.0	TNS1604-R24	BFTX0307N	TRX10 (*1)	LH040	LH025

*Dedicated holder for 1.6mm / 2.0mm / 2.4mm corner radius inserts. Other sizes cannot be used.
*1 Wrench for shim is sold separately from the main body.

Clamp Set Parts C48

N·m Recommended Tightening Torque (N·m)

Inserts & Special Holders for High-efficiency Machining

Single-Sided Insert type (SUMIBORON)

Dimensions (mm)

Appearance	Cat. No.	No. of Cutting Edges	BNC2115	BNC2125	BNC2135 (New)	BNC2010	BNC2020	BNC200	BNC300	Corner Radius	CBN Cutting Edge Length	Inscribed Circle	Thickness	Hole Dia.
	**2NC-CNGA 120416**	2				●	●	▲	●	1.6	3.3	12.7	4.76	5.16
	120420	2				●	●	▲	●	2.0	3.2	12.7	4.76	5.16
	120424	2				●	●	▲	●	2.4	3.1	12.7	4.76	5.16
	**2NC-DNGA 150416**	2				●	●	▲	●	1.6	3.4	12.7	4.76	5.16
	150420	2				●	●	▲	●	2.0	3.0	12.7	4.76	5.16
	150424	2				●	●	▲	●	2.4	2.7	12.7	4.76	5.16
	**3NC-TNGA 160416**	3				●	●	▲	●	1.6	3.3	9.525	4.76	3.81
	160420	3				●	●	▲	●	2.0	3.0	9.525	4.76	3.81
	160424	3				●	●	▲	●	2.4	2.7	9.525	4.76	3.81

Double-Sided Insert type (SUMIBORON)

Dimensions (mm)

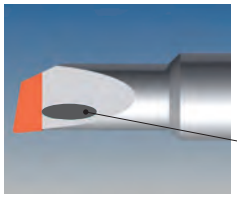
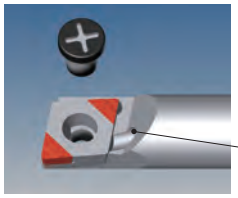
Appearance	Cat. No.	No. of Cutting Edges	BNC2115	BNC2125	BNC2135 (New)	BNC2010	BNC2020	BNC200	BNC300	Corner Radius	CBN Cutting Edge Length	Inscribed Circle	Thickness	Hole Dia.
	**4NC-CNGA 120416**	4	●	●	●	●	●	▲	●	1.6	3.3	12.7	4.76	5.16
	120420	4	●	●	●	●	●	▲	●	2.0	3.2	12.7	4.76	5.16
	120424	4	●	●	●	●	●	▲	●	2.4	3.1	12.7	4.76	5.16
	**4NC-DNGA 150416**	4	●	●	●	●	●	▲	●	1.6	3.4	12.7	4.76	5.16
	150420	4	●	●	●	●	●	▲	●	2.0	3.0	12.7	4.76	5.16
	150424	4	●	●	●	●	●	▲	●	2.4	2.7	12.7	4.76	5.16
	**6NC-TNGA 160416**	6	●	●	●	●	●	▲	●	1.6	3.3	9.525	4.76	3.81
	160420	6	●	●	●	●	●	▲	●	2.0	3.0	9.525	4.76	3.81
	160424	6	●	●	●	●	●	▲	●	2.4	2.7	9.525	4.76	3.81

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

BSME series / SEXC series

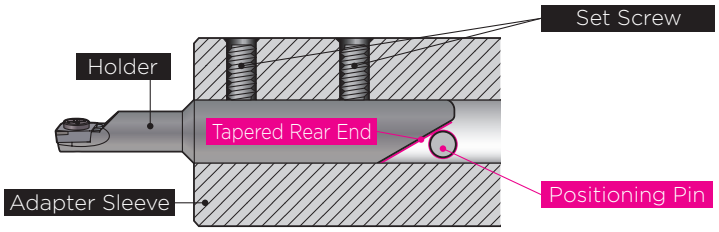
■ Features

- For internal boring of hardened steel with min. bore diameters from ø2.5mm.
- Achieves high-precision cutting edge positioning thanks to the newly developed clamp mechanism.
- Realises high-efficiency machining by switching from grinding to cutting in the small diameter range.
- BSME series (brazed type)
  Can be used with bore diameters from ø2.5 to 5.0mm.
- SEXC series (indexable Insert type)
  Can be used with bore diameters from ø4.0 to 6.0mm.
  Expansion of coated carbide and cermet grades.
- Economical 2-cornered insert.

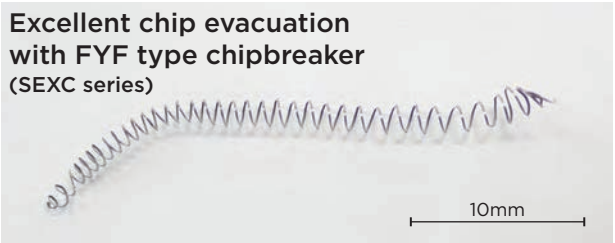
Brazed CBN type BSME series	Indexable Insert type SEXC series
Min. Bore Dia.: ø2.5 to 5.0mm	Min. Bore Dia.: ø4.0 to 6.0mm
High-quality, unique cutting edge shape  Internal Coolant Supply (Standard)	2-cornered insert used  Internal Coolant Supply (Standard)

Clamp Mechanism

Achieves high-precision cutting edge positioning by combining a holder with a tapered rear end and an adapter sleeve with an internal positioning pin. (common to BSME series and SEXC series)

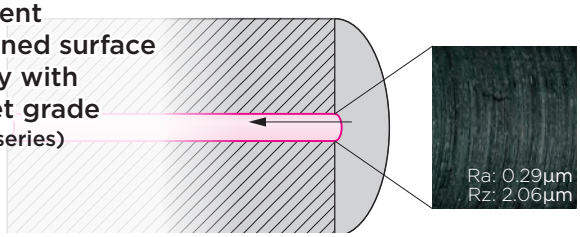


Excellent chip evacuation with FYF type chipbreaker (SEXC series)



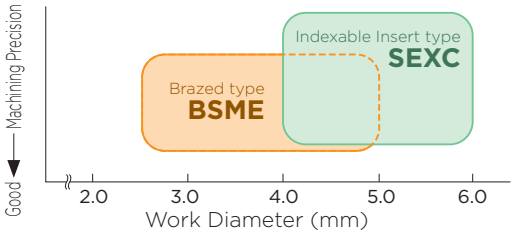
Work Material: SUS304 Internal Boring, Insert: ECEM 03X102L-FYF (AC1030U)
Cutting Conditions: vc = 100m/min, f = 0.05mm/rev, ap = 0.03mm, Work Dia.: ø4

Excellent machined surface quality with cermet grade (SEXC series)

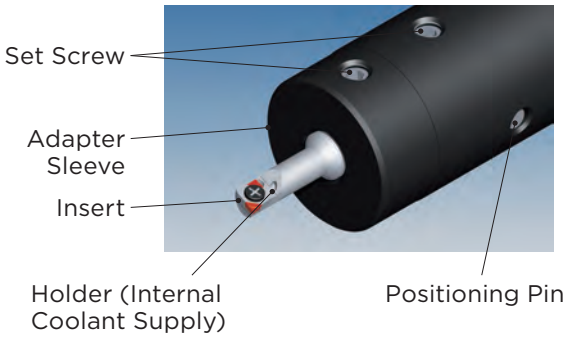


Work Material: SCM415 Internal Boring, Insert: ECEM 03X102L-FYF (T1500A)
Cutting Conditions: vc = 100 m/min, f = 0.03 mm/rev, ap = 0.03 mm

Application Range



Basic Configuration



BSME series

CBN

SUMIBORON
Brazed

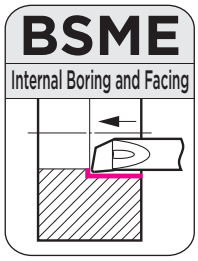


Fig 1

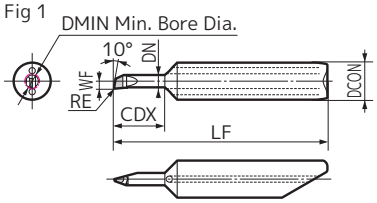


Fig 2

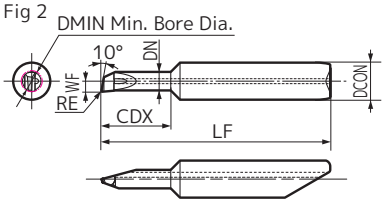


Figure shows right-handed (R) tool.

Holder (SUMIBORON)

Dimensions (mm)

Cat. No.	BN2000 R	BN2000 L	Min. Bore Dia. DMIN	Diameter DCON	Neck Diameter DN	Overall Length LF	Cutting Edge Distance WF	Maximum Boring Depth CDX	Corner Radius RE	Applicable Adapter Sleeve	Fig
BSME R/L25020D2S6	●	●	**2.5**	6.0	2.0	32.0	1.20	5.3	0.2		1
BSME R/L25020D3S6	●	●	**2.5**	6.0	2.0	34.5	1.20	7.8	0.2		1
BSME R/L25020D4S6			**2.5**	6.0	2.0	37.0	1.20	10.3	0.2		1
BSME R/L30020D2S6	●	●	**3.0**	6.0	2.5	32.8	1.45	6.3	0.2		2
BSME R/L30020D3S6	●	●	**3.0**	6.0	2.5	35.8	1.45	9.3	0.2		2
BSME R/L30020D4S6			**3.0**	6.0	2.5	38.8	1.45	12.3	0.2		2
BSME R/L35020D2S6	●	●	**3.5**	6.0	3.0	33.5	1.70	7.3	0.2		2
BSME R/L35020D3S6	●	●	**3.5**	6.0	3.0	37.0	1.70	10.8	0.2		2
BSME R/L35020D4S6			**3.5**	6.0	3.0	40.5	1.70	14.3	0.2	HBSM6020	2
BSME R/L40020D2S6	●	●	**4.0**	6.0	3.5	33.9	1.95	8.3	0.2	HBSM6020A	2
BSME R/L40020D3S6	●	●	**4.0**	6.0	3.5	37.9	1.95	12.3	0.2		2
BSME R/L40020D4S6			**4.0**	6.0	3.5	41.9	1.95	16.3	0.2		2
BSME R/L45020D2S6	●	●	**4.5**	6.0	4.0	35.0	2.20	9.3	0.2		2
BSME R/L45020D3S6	●	●	**4.5**	6.0	4.0	39.5	2.20	13.8	0.2		2
BSME R/L45020D4S6			**4.5**	6.0	4.0	44.0	2.20	18.3	0.2		2
BSME R/L50020D2S6	●	●	**5.0**	6.0	4.5	35.8	2.45	10.3	0.2		2
BSME R/L50020D3S6	●	●	**5.0**	6.0	4.5	40.8	2.45	15.3	0.2		2
BSME R/L50020D4S6			**5.0**	6.0	4.5	45.8	2.45	20.3	0.2		2

The BSME series requires HBSM6020(A) adapter sleeve (sold separately).

Identification Code

BSM Series Code
E Carbide Shank with Oil Hole
R Feed Direction
350 Min. Bore Dia.
20 Cutting Edge Corner Radius
D2 L/D
S6 Shank Dia.

Fig 1

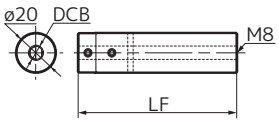
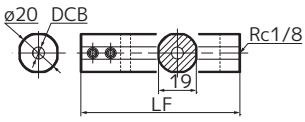


Fig 2



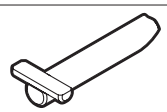
Adapter Sleeve (Sold Separately) Parts

Dimensions (mm)

Cat. No.	Stock	Bore Dia. DCB	Overall Length LF	Fig	Set Screw	Wrench
HBSM6020	●	6.0	80	1	BT0506	TH025
HBSM6020A	●	6.0	80	2		

Mounting Method L135

Alignment Jig (Sold Separately) For HBSM6020 Adapter Sleeve

Cat. No.	Stock	
AFBSM60	●	

This jig is used for centring adapter sleeves when setting them into adapter sleeve holders.

Recommended Cutting Conditions

Work Material	H Hardened Steel	
Spindle Speed n (min^{-1})	Above 2,000	Above 2,000
Depth of Cut ap (mm)	0.01-0.15	0.01-0.15
Feed Rate f (mm/rev)	0.01-0.10	0.01-0.10

May cause chattering or chipping at the cutting edge during low-speed machining.
Excessive depth of cut causes deformation of the tool, which consequently leads to deterioration of dimensional tolerance.

SEXC series

Expansion | Carbide (Coolant Hole) | CBN

Carbide / Cermet / SUMIBORON
Screw-on

SumiSmall

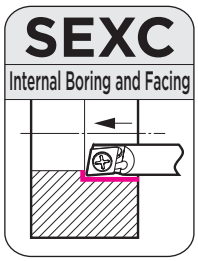


Fig 1

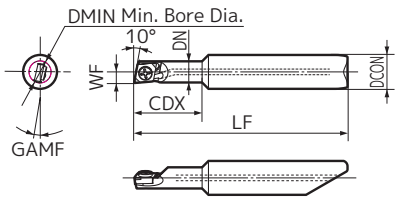


Figure shows right-handed (R) tool.

Holder

Dimensions (mm)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Neck Diameter DN	Overall Length LF	Cutting Edge Distance WF	Boring Depth CDX	Rake Angle GAMF	Applicable Adapter Sleeve	Fig	Parts: Bolt	Parts: Bolt (N·m)	Parts: Wrench
E06D2-SEXC R/L03-04P	●	●	**4.0**	6.0	3.75	33.75	1.95	8	-13°	HBSM6020 HBSM6020A	1	MIB1.6-2	0.2	SDBSM
E06D3-SEXC R/L03-04P	●	●	**4.0**	6.0	3.75	37.75	1.95	12	-13°		1			
E06D2-SEXC R/L03-05P	●	●	**5.0**	6.0	4.75	35.25	2.45	10	-12°		1	MIB1.6-2.5	0.2	
E06D3-SEXC R/L03-05P	●	●	**5.0**	6.0	4.75	40.25	2.45	15	-12°		1			
E06D2-SEXC R/L03-06P	●	●	**6.0**	6.0	5.75	36.75	2.95	12	-11°		1	MIB1.6-3	0.2	
E06D3-SEXC R/L03-06P	●	●	**6.0**	6.0	5.75	42.75	2.95	18	-11°		1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
The SEXC series requires HBSM6020(A) adapter sleeve (sold separately).

Identification Code

E	06	D2	-	S	E	X	C	R	03	-	04	P
Carbide Shank with Oil Hole	Shank Dia.	L/D		Screw-on	Insert Shape	Cutting Edge Shape	Insert Relief Angle	Feed Direction	Insert Inscribed Circle		Min. Bore Dia.	Accessories

Fig 1

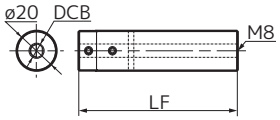
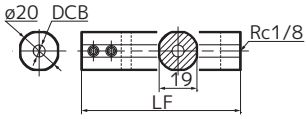


Fig 2



Adapter Sleeve (Sold Separately)

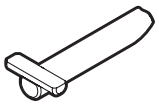
Dimensions (mm)

Cat. No.	Stock	Bore Dia. DCB	Overall Length LF	Fig	Parts: Set Screw	Parts: Wrench
HBSM6020	●	6.0	80	1	BT0506	TH025
HBSM6020A	●	6.0	80	2		

Mounting Method L135

Alignment Jig (Sold Separately) For HBSM6020 Adapter Sleeve

Cat. No.	Stock
AFBSM60	●



This jig is used for centring adapter sleeves when setting them into adapter sleeve holders.

Insert (Coated Carbide / SUMIBORON)

Dimensions (mm)

Cat. No.	AC1030U R	AC1030U L	T1500A R	T1500A L	BN2000	BN7125	BN7000	Corner Radius RE	Fig
ECEM 03X1005 R/L-FYF	●	●	●	●	—	—	—	0.05	1
ECEM 03X101 R/L-FYF	●	●	●	●	—	—	—	0.1	1
ECEM 03X1015 R/L-FYF	●	●	●	●	—	—	—	0.15	1
ECEM 03X102 R/ L-FYF	●	●	●	●	—	—	—	0.2	1
2NU-ECXA 030X02 LE	—	—	—	—	●			0.2	2
2NU-ECXA 030X02 LF	—	—	—	—	●	●	▲	0.2	2

Fig 1

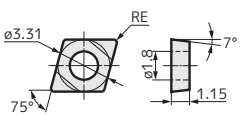
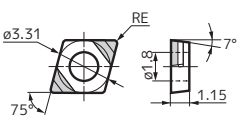


Figure shows right-handed (R) tool.

Fig 2



Part Number Suffix: LE: Honed Edge, LF: Sharp Edged, FYF: Sharp Edged (with Chipbreaker)

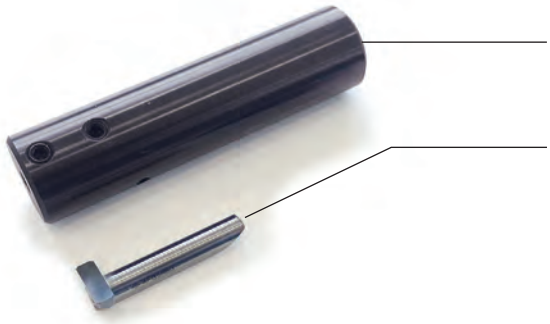
Recommended Cutting Conditions

Work Material	P General Steel		M Stainless Steel		K Cast Iron		N Non-Ferrous Metal		S Exotic Alloy	H Hardened Steel		
Insert Grades	AC1030U	T1500A	AC1030U	T1500A	AC1030U	T1500A	AC1030U	T1500A	AC1030U	BN2000	BN7125	BN7000
Spindle Speed n (min⁻¹)	2,000-10,000	2,000-10,000	2,000-8,000	2,000-8,000	2,000-10,000	2,000-10,000	5,000-15,000	5,000-15,000	2,000-6,000	Above 2,000	Above 2,000	Above 2,000
Depth of Cut ap (mm)	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	Up to 0.2	0.01-0.15	0.01-0.15	0.01-0.15
Feed Rate f (mm/rev)	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	Up to 0.05	0.01-0.10	0.01-0.10	0.01-0.10

May cause chattering or chipping at the cutting edge during low-speed machining. Excessive depth of cut causes deformation of the tool, which consequently leads to deterioration of dimensional tolerance.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

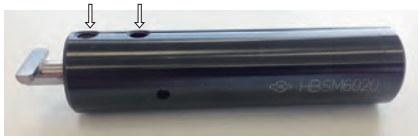
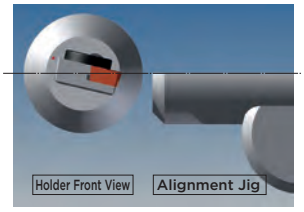
■ Dedicated Adapter Sleeve/Alignment Jig



Adapter Sleeve
HBSM6020

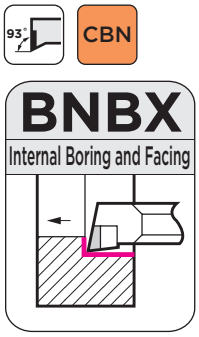
Alignment Jig
AFBSM60

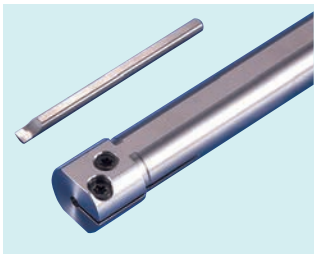
■ Mounting Method (HBSM6020A has a side lock flat, so centring with an alignment jig is not required.)

1	Insert the alignment jig until it hits the positioning pin set in the adapter sleeve, and tighten the two set screws.	(2) Tighten the two set screws (1) Insert until it hits the positioning pin ⟹ 
2	Mount the adapter sleeve into the sleeve holder and temporarily tighten the fastening screws.	 Holder for Adapter Sleeve Temporary screw fastening 
3	Rotate the adapter sleeve gradually to adjust until the flat strip of the alignment jig is horizontal. 	When a boring bar is mounted into the adapter sleeve adjusted by the alignment jig, its cutting edge position will automatically be set at the centre.  Holder Front View Alignment Jig
4	Using a tool presetter, measure the diameter of the tool.	

*Steps 1 and 3 above are not required when using HBSM6020A.

BNBX series





- **Newly developed high rigidity slit-clamping system, excellent for small hole internal boring**
  - Enables maximum overhang of L/D = 5
  - Minimal deformation produces boring with excellent dimensional tolerance
  - Minimal chatter produces superior surface finish
  - Easy bar indexing while clamped
- **Lineup now includes BN2000 for hardened steel and BN7125/BN7000 for sintered alloy**

Holder (SUMIBORON)

Dimensions (mm)

Cat. No.	BN2000	BN7125	BN7000	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Corner Radius RE	Applicable Adapter Sleeve	Fig
BNBX 020R	●	●	▲	**2.5**	2.0	1.8	40	0.2	HBX 2016	1
BNBX 025R	●	●	▲	**3.0**	2.5	2.2	40	0.2	HBX 2516	1
BNBX 030R	●	●	▲	**3.5**	3.0	2.7	40	0.2	HBX 3016	1
BNBX 035R	●	●	▲	**4.0**	3.5	3.2	40	0.2	HBX 3516	1
BNBX 040R	●	●	▲	**4.5**	4.0	3.7	40	0.2	HBX 4016	1
BNBX 045R	●	●	▲	**5.0**	4.5	4.2	40	0.2	HBX 4516	1
BNBX 050R	●	●	▲	**5.5**	5.0	4.7	60	0.2	HBX 5016	1
BNBX 055R	●	●	▲	**6.0**	5.5	5.2	60	0.2	HBX 5516	1
BNBX 060R	●	●	▲	**6.5**	6.0	5.7	60	0.2	HBX 6016	1
BNBX 065R	●			**7.0**	6.5	6.2	60	0.2	HBB 6516	1
BNBX 070R	●			**7.5**	7.0	6.7	80	0.2	HBB 716	1
BNBX 075R	●			**8.0**	7.5	7.2	80	0.2	HBB 7516	1
BNBX 080R	●			**8.5**	8.0	7.7	80	0.2	HBB 816	1

BNBX bars can be used with HBB type adapter sleeves, but HBX type adapter sleeves are recommended for bars below ø6mm.

Fig 1

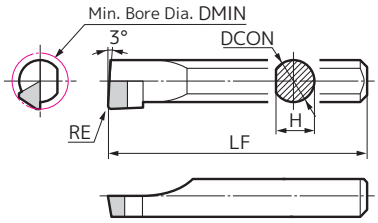


Fig 1

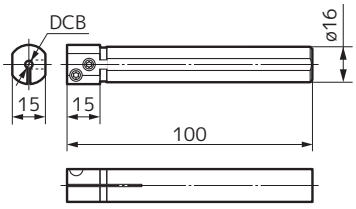
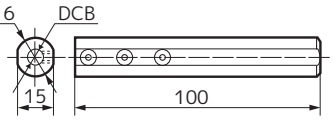


Fig 1



Adapter Sleeve (HBX type)

Dimensions (mm)

Cat. No.	Stock	Bore Dia. DCB	Applicable Tool Holder	Fig
HBX 2016	●	2.0	BNBX 020R	1
HBX 2516	●	2.5	BNBX 025R	1
HBX 3016	●	3.0	BNBX 030R	1
HBX 3516	●	3.5	BNBX 035R	1
HBX 4016	●	4.0	BNBX 040R	1
HBX 4516	●	4.5	BNBX 045R	1
HBX 5016	●	5.0	BNBX 050R	1
HBX 5516	●	5.5	BNBX 055R	1
HBX 6016	●	6.0	BNBX 060R	1

Adapter Sleeve (HBB type)

Dimensions (mm)

Cat. No.	Stock	Bore Dia. DCB	Applicable Tool Holder	Fig
HBB 6516	●	6.5	BNBX 065R	1
HBB 716	●	7.0	BNBX 070R	1
HBB 7516	●	7.5	BNBX 075R	1
HBB 816	●	8.0	BNBX 080R	1

HBB type adapter sleeve can also be used with ø2.5 to 6.0mm holders.

Recommended Cutting Conditions

Spindle Speed n	Above 2,000min^{-1}	Low speeds may cause chattering and chipping on the cutting edge.
Depth of Cut ap	0.01 to 0.2mm	Excessive depth of cut may cause larger tool deformation, resulting in deterioration of bore accuracy.
Feed Rate f	0.01 to 0.1mm/rev	—

Parts (for Adapter Sleeve)

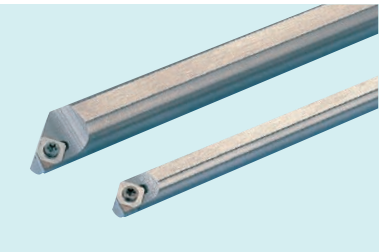
Applicable Adapter Sleeve	Flat Insert Screw	(N·m)	Set Screw	Wrench
HBX2○○○	BFTX0409N	**1.5**	BT06035T	TRD15
HBX3○○○	BFTX0409N	**3.0**	BT06035T	TRD15
HBX4○○○				
HBX5○○○				
HBX6○○○				
HBB○○○○	—	—	BT0404	LH020

Important Notes

(1) Make the holder overhang as short as possible. (Maximum L/D = 5)
(2) Even minor workpiece runout may affect tool life.
(3) Select a boring bar with a diameter as close to the bore diameter as possible.
(4) Although it is difficult to increase the rotational speed in small-diameter boring applications, higher speeds are recommended whenever possible to extend tool life.

(N·m) Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

BNZ series



- ø7mm minimum bore diameter with special one-use insert
- High-rigidity indexable type boring bar with all-cemented carbide shank and powerful clamp
- Economical and easy tool management with one-use type inserts

95° CBN

SUMIBORON
Screw-on

SumiSmall

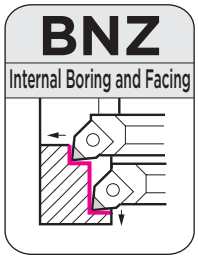
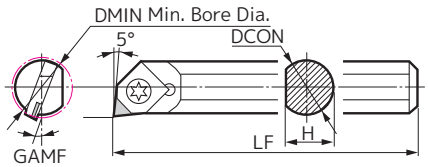


Fig 1



Holder

Parts

Dimensions (mm)

Cat. No.	Stock	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Rake Angle GAMF	Fig	Flat Insert Screw	N·m	Wrench (For Torx hole)	Adapter Sleeve
BNZ 606R	●	**7.0**	6.0	5.5	80	-14°	1	BFTX0204N	**0.5**	TRX06	HBB616
BNZ 608R	●	**9.0**	8.0	7.5	100	-12°	1				HBB816
BNZ 610R	●	**11.0**	10.0	9.5	125	-10°	1				—
BNZ 612R	●	**13.0**	12.0	11.0	130	-8°	1				
BNZ 616R	●	**17.0**	16.0	15.0	145	-6°	1				
BNZ 620R	●	**21.0**	20.0	19.0	160	-5°	1				

Insert (SUMIBORON)

Dimensions (mm)

Quantity	Cat. No.	BNC2010	BNC2020	BN1000	BN2000	BN7125	BN7000	Corner Radius RE
Single pack	**NU-ZNEX 040102**	—	—	●	●	●	▲	0.2
	NU-ZNEX 040104	—	—	●	●	●	▲	0.4
	NC-ZNEX 040102LE	●	—	—	—	—	—	0.2
	NC-ZNEX 040104LE	●	—	—	—	—	—	0.4
	NC-ZNEX 040102LT	—	●	—	—	—	—	0.2
	NC-ZNEX 040104LT	—	●	—	—	—	—	0.4
10 pack	**T-NU-ZNEX 040102**	—	—		●			0.2
	T-NU-ZNEX 040104	—	—		●			0.4

Fig 1

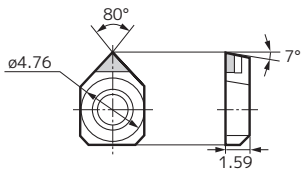
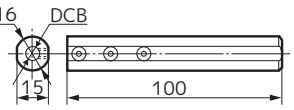


Fig 1



Adapter Sleeve

Dimensions (mm)

Cat. No.	Stock	Bore Dia. DCB	Applicable Holder	Fig
HBB 616	●	6.0	BNZ 606R	1
HBB 816	●	8.0	BNZ 608R	1

HBX type adapter sleeve (HBX6016) can also be used with BNZ606R.

Recommended Cutting Conditions

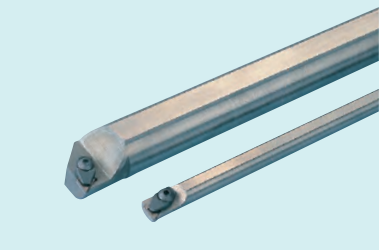
Spindle Speed n	Above 2,000min^{-1}	Low speeds may cause chattering and chipping on the cutting edge.
Depth of Cut ap	0.03 to 0.2mm	Excessive depth of cut may cause larger tool deformation, resulting in deterioration of bore accuracy.
Feed Rate f	0.03 to 0.1mm/rev	—

Important Notes

(1) Make the holder overhang as short as possible. (Maximum L/D = 5)
(2) Even minor workpiece runout may affect tool life.
(3) Select a boring bar with a diameter as close to the bore diameter as possible.
(4) Although it is difficult to increase the rotational speed in small-diameter boring applications, higher speeds are recommended whenever possible to extend tool life.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

BNB series



- **High rigidity full cemented carbide boring bar shank**
  - Minimal deformation produces boring with excellent dimensional tolerance.
  - Minimal chatter produces superior surface finish.
- **Full-top SUMIBORON insert enables 3 cutting edges**
- **Can be used with SUMIDIA inserts for non-ferrous metal machining**
- **Now with economical single-corner NF type SUMIDIA insert**

60° 92° CBN PCD

SUMIBORON
Clamp-on

SumiSmall

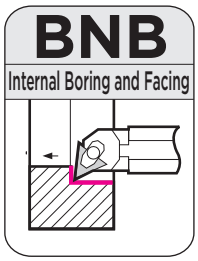
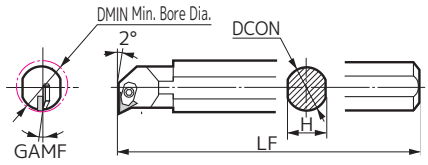


Fig 1



Holder

Parts

Dimensions (mm)

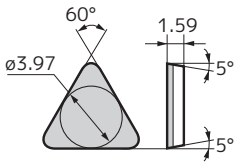
Cat. No.	Stock	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Rake Angle GAMF	Fig	Clamp Plate	Bolt	Nut	Wrench
											 (For Hexagonal hole)
BNB 508R	●	**10.0**	8.0	7.0	140	-9°	1	BNBC	BH0306	BNBW-2	TH020
BNB 510R	●	**12.0**	10.0	9.0	140	-8°	1				
BNB 512R	●	**14.0**	12.0	11.0	160	-6°	1		FBUP3-A0-9	BNBW-4	
BNB 516R	●	**18.0**	16.0	14.0	180	-5°	1				
BNB 520R	●	**22.0**	20.0	18.0	180	-4°	1		BH0310	BNBW-7	

Insert (SUMIBORON, SUMIDIA)

Dimensions (mm)

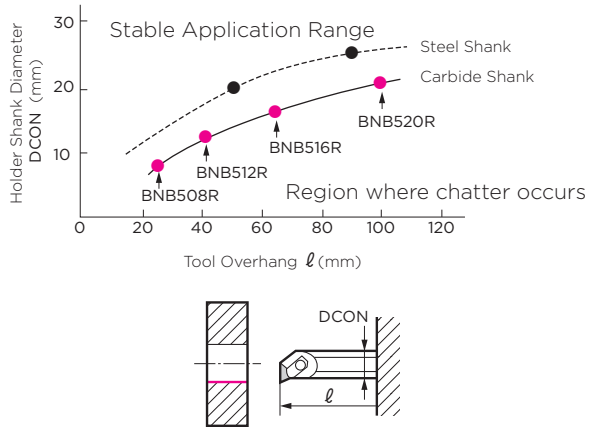
Cat. No.	SUMIBORON BNX10	BNX20	BN2000	BN350	BN500	BN7125	BN7000	SUMIDIA DA150	DA1000	Corner Radius RE
TBGN 060102B		●	●					●	●	0.2
TBGN 060104B	▲	●	●	●	●	●	▲	●	●	0.4
TBGN 060108B		●	●	●	●	●	▲			0.8
TBGN 060102-BSTN*1	—	●	—	—	—	—	—	—	—	0.2
TBGN 060104-BSTN*1	—	●	—	—	—	—	—	—	—	0.4
TBGN 060108-BSTN*1	—	●	—	—	—	—	—	—	—	0.8
NF-TBGN 060102*2	—	—	—	—	—	—	—	—	●	0.2
NF-TBGN 060104*2	—	—	—	—	—	—	—	—	●	0.4

Fig 1

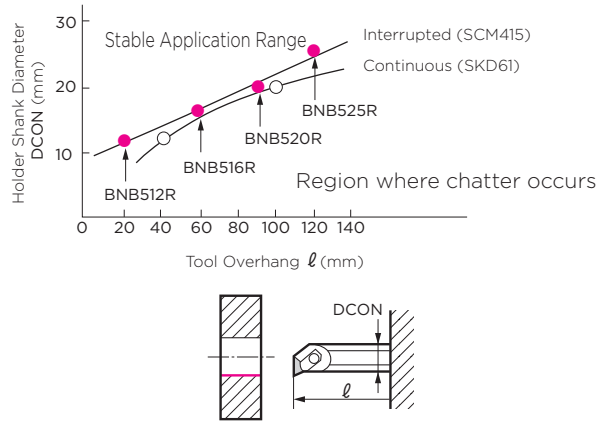


*1: TBGN OOOOOO-BSTN is only available in BNX20 grade and has a smaller negative land angle. (BSTN: -15°, B: -25°. However, the negative land angle is uniquely configured for each grade.)
*2: NF-TBGN is a single corner insert. (This is not a Full-top insert)

Cutting Performance



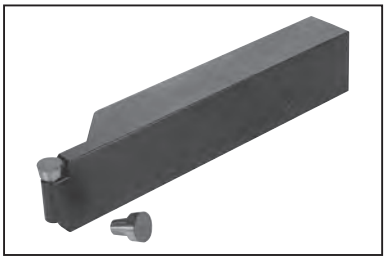
Work Material: SKD61 (60HRC)
Insert Cat. No.: TBGN060104B
Cutting Conditions: vc = 100m/min, f = 0.1mm/rev, ap = 0.2mm



Work Material: SCM415 (61HRC) Internal Diameter ø45 (6U Groove)
Insert Cat. No.: TBGN060104B
Cutting Conditions: vc = 100m/min, f = 0.1mm/rev, ap = 0.2mm

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

TRGT series



● Clamping by cutting force alone

- Secure clamping is achieved by inserting the tapered portion of the insert into the holder.
- The lack of protrusions on the insert rake face allows smooth chip evacuation.

● Round insert enables various machining operations

Small round insert with stable clamping can be applied to various machining operations.

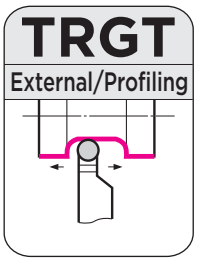


Fig 1

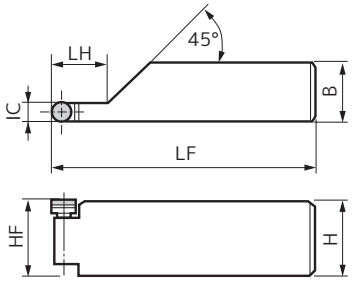


Figure shows right-handed (R) tool.

Holder

Dimensions (mm)

Cat. No.	Stock R	Stock L	Inscribed Circle IC	Height H	Width B	Overall Length LF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig
TRGT R/L2020K05	●		5	20	20	125	20	16	RTGN 0508M0	1
R/L2020K06	●		6	20	20	125	20	16	RTGN 0608M0	1
R/L2525M07			7	25	25	150	25	20	RTGN 0711M0	1
R/L2525M08	●		8	25	25	150	25	20	RTGN 0811M0	1
TRGT R/L3225P09	●		9	32	25	170	32	25	RTGN 0914M0	1
	●		10	32	25	170	32	25	RTGN 1014M0	1
TRGT R/L3225P12			12	32	25	170	32	25	RTGN 1214M0	1

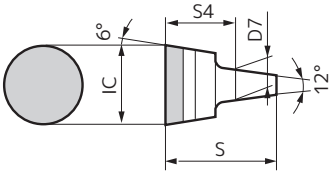
Inserts are not included with the tool holders.

Insert (SUMIBORON)

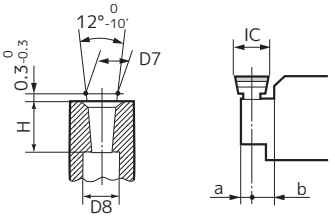
Dimensions (mm)

Cat. No.	BN2000	BNX20	BN7000	Inscribed Circle IC	Diameter D7	Thickness S	Thickness 2 S4	Fig
RTGN 0508M0		●		5	2.5	7.5	3.5	1
0608M0		●		6	3.5	7.5	3.5	1
RTGN 0711M0		●		7	3.5	11.0	5.0	1
0811M0		●		8	4.5	11.0	5.0	1
RTGN 0914M0		●		9	5.5	14.0	6.0	1
1014M0		●		10	5.5	14.0	6.0	1
1214M0		●		12	7.5	14.0	6.0	1

Fig 1

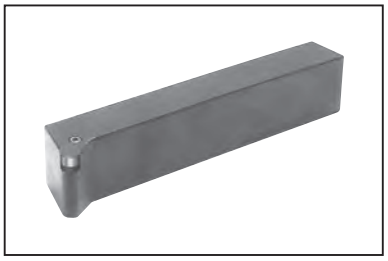


Insert Mounting Details



Supported Insert Diameter IC	H	D7	D8	a	b
5	4.0	2.5	1.9	1.85	3.2
6	4.0	3.5	2.9	2.35	3.7
7	6.0	3.5	2.5	2.75	4.3
8	6.0	4.5	3.5	3.25	4.8
9	7.5	5.5	4.2	4.15	5.9
10	7.5	5.5	4.2	4.15	5.9
12	7.5	7.5	6.2	5.15	6.9

PR series



- **Lever lock clamping system**
  - Easy operation; the lack of protrusions on the insert rake face allows smooth chip evacuation.
- **Versatile round insert can be applied to various operations.**

PRGC
External Profiling

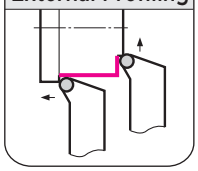


Fig 1

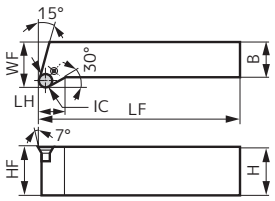


Figure shows right-handed (R) tool.

Holder

Dimensions (mm)

Cat. No.	Stock		Inscribed Circle	Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert	Fig
	R	L	IC	H	B	LF	WF	HF	LH		
PRGC R/L3225P9	●	●	9	32	25	170	32	32	18	RCGA 0906M0	1

PRDC
General External Turning

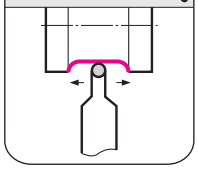
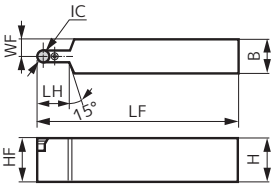


Fig 1



Holder

Dimensions (mm)

Cat. No.	Stock	Inscribed Circle	Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert	Fig
		IC	H	B	LF	WF	HF	LH		
PRDC N 3225P9	●	9	32	25	170	12.5	32	25	RCGA 0906M0	1

PRGN
General External Turning

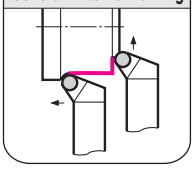


Fig 1

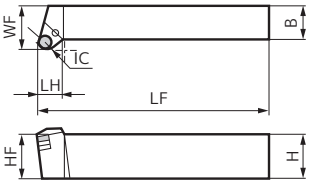


Figure shows right-handed (R) tool.

Holder

Dimensions (mm)

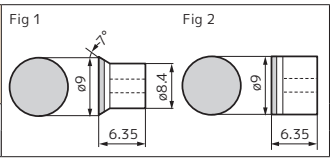
Cat. No.	Stock		Inscribed Circle	Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert	Fig
	R	L	IC	H	B	LF	WF	HF	LH		
PRGN R/L3225P9	●	●	9	32	25	170	32	32	10	RNGA 0906M0	1

Inserts are not included with the tool holders.

Insert (SUMIBORON)

Dimensions (mm)

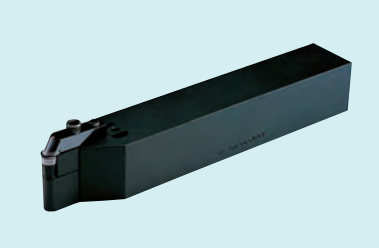
Cat. No.	BN2000	BNX20	BN350	BN7000	Fig
RCGA 0906M0	●				1
RNGA 0906M0	●	●			2



Parts

Applicable Holder	Shim	Lever Pin	Bolt	Shim Retainer	Wrench
PRGC R/L3225P9	LSR817	LCL3S	LCS3	LSP3	LH025
PRDCN 3225P9					
PRGN R/L3225P9	LSR917				

BNRN series



● Insert can be reground and used again

- The same holder can be used for a reground insert by adjusting the slide locator with a clamp.

● Reliable holder design

- The tip of the clamp plate is a cemented carbide chipbreaker that can withstand wear from chips.
- Slide locator uses HSS for durability.

CBN

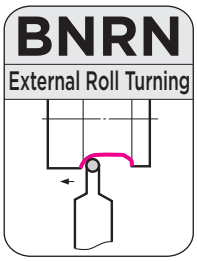
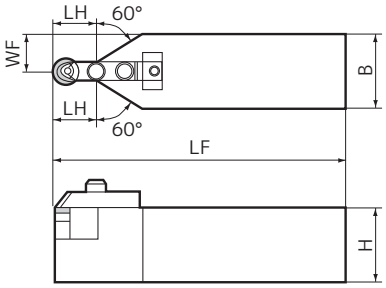


Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Head LH	Applicable Insert New Cat. No.	Applicable Insert (Regrindable range)	Fig
BNRN 3232-08-07		**32**	**32**	200	16	13	RBG08-B	8.0 to 7.0	1
BNRN 4038-10-09		**40**	**38**	250	19	17	RBG10-B	10.0 to 9.0	1
4038-12-11		**40**	**38**	250	19	20	RBG12-B	12.0 to 11.0	1
BNRN 5050-14-12		**50**	**50**	350	25	25	*	14.0 to 12.0	1
5050-16-14		**50**	**50**	350	25	25	RBG16-B	16.0 to 14.0	1
5050-18-16		**50**	**50**	350	25	30	*	18.0 to 16.0	1
5050-20-18		**50**	**50**	350	25	30	RBG20-B	20.0 to 18.0	1
5050-22-20		**50**	**50**	350	25	35	*	22.0 to 20.0	1
5050-24-22		**50**	**50**	350	25	35	*	24.0 to 22.0	1
5050-26-24		**50**	**50**	350	25	35	RBG26-B	26.0 to 24.0	1

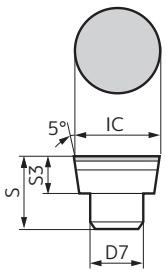
*Blank space indicates holders for reground inserts. Inserts are sold separately.

Insert (SUMIBORON)

Dimensions (mm)

Cat. No.	BN7125	BN7000	Inscribed Circle IC	Diameter D7	Thickness 2 S3	Thickness S	Fig
RBG 08-B	●	▲	8.0	4.0	4.0	6.5	1
10-B	●	▲	10.0	5.0	5.0	9.0	1
12-B	●	▲	12.0	6.0	6.0	11.0	1
16-B	●	▲	16.0	8.0	8.0	13.0	1
20-B	●	▲	20.0	10.0	10.0	15.0	1
26-B	●	▲	26.0	14.0	10.0	15.0	1

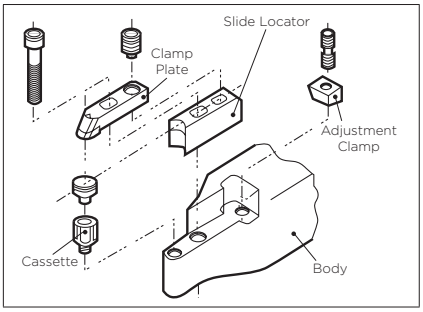
Fig 1



Parts

Applicable Holder	Slide Locator	Adjustment Clamp	Cassette	Clamp Plate	Cap Screw	Set Screw	Double Screw	Wrench
BNRN 3232-08-07	BNRSR-08	BNRC-08	BNRE-08	BNRW-08	BX0425	BTD0609	WB5-18	LH025
BNRN 4038-10-09	BNRSR-10		BNRE-10					LH030
BNRN 4038-12-11	BNRSR-12	BNRC-12	BNRE-12	BNRW-12	BX0635	BTD0812	WB6-20	LH030
BNRN 5050-14-12	BNRSR-14		BNRE-14		BX0640		WB6-30	LH040 LH050
BNRN 5050-16-14	BNRSR-16	BNRC-16	BNRE-16	BNRW-16	BX0640	BTD0812	WB8-30	LH040 LH050
BNRN 5050-18-16	BNRSR-18		BNRE-18				WB6-30	
BNRN 5050-20-18	BNRSR-20	BNRC-20	BNRE-20	BNRW-20			WB8-30	
BNRN 5050-22-20	BNRSR-22		BNRE-22				WB6-30	
BNRN 5050-24-22	BNRSR-24	BNRC-26	BNRE-24	BNRW-26	BX0840	BTD0818	WB6-30	LH040
BNRN 5050-26-24	BNRSR-26		BNRE-26				WB8-30	LH060

Structure



▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

GWB series

■ Features

- Tangentially-mounted insert enhances tool rigidity.
- Double clamping holder design improves stability during continuous and interrupted grooving. Can also be used for traverse cutting.
- Long tool life for interrupted cutting applications with the new Coated SUMIBORON BNC30G grade for grooving (BN2000 recommended for continuous cutting).
- Suited for grooving various types of hardened steel. Variety of widths of cut available from 1.5mm to 6.0mm.

External CBN

Hardened Steel, Shallow Grooves
Double Clamp

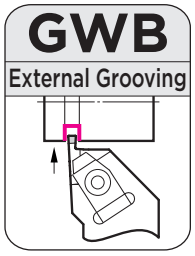


Fig 1

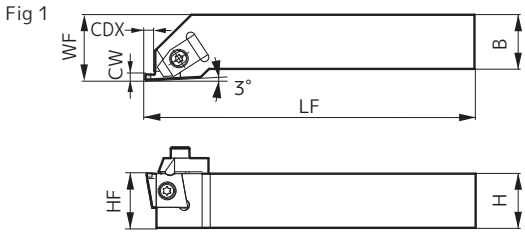


Figure shows right-handed (R) tool.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Width of Cut CW	Maximum Groove Depth CDX	Group No.	Fig	Clamp Plate	Cap Screw	Cap Screw (N·m)	Flat Head Screw	Spring	Wrench
GWB R/L 2525-45	●	●	25	25	151 (150)	30	25	1.5 ≤ CW ≤ 4.5	3.5 to 5.0	1	1	TF72/TF73	BX0520T	**5.0**	BFTX0511N	GSP06	TRX20
R/L 2525-60	●	●	25	25	151	30	25	4.5 < CW ≤ 6.0	**5.0**	2	1						

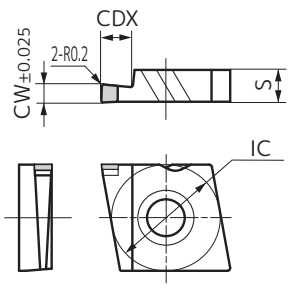
Dimensions in ( ) are for width of cut (CW) of 3.0 or less. Right-handed (R) tool holders are applicable with right-handed (R) inserts and clamp plates (TF72).

Insert (SUMIBORON)

Dimensions (mm)

Cat. No.	BN2000 R	BN2000 L	BNC30G R	BNC30G L	Width of Cut CW	Groove Depth CDX	Inscribed Circle IC	Thickness S	Group No.	Applicable Holder	Fig
CGA R/L 1504150	●	●	●	●	**1.5**	3.5	15.875	4.76	1	GWB R/L 2525-45	1
R/L 1504200	●	●	●	●	**2.0**	3.5	15.875	4.76			1
R/L 1504250	●	●	●	●	**2.5**	4.0	15.875	4.76			1
R/L 1504300	●	●	●	●	**3.0**	4.0	15.875	4.76			1
R/L 1504350	●	●	●	●	**3.5**	5.0	15.875	4.76			1
R/L 1504400	●	●	●	●	**4.0**	5.0	15.875	4.76			1
R/L 1504450	●	●	●	●	**4.5**	5.0	15.875	4.76			1
CGA R/L 1506500	●	●	●	●	**5.0**	5.0	15.875	6.35	2	GWB R/L 2525-60	1
R/L 1506550	●	●	●	●	**5.5**	5.0	15.875	6.35			1
R/L 1506600	●	●	●	●	**6.0**	5.0	15.875	6.35			1

Fig 1



* It is also possible to manufacture widths of cut other than those listed above (CW = 1.5 to 6.0mm).

Grade Features

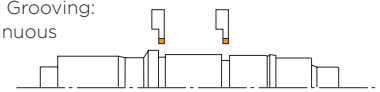
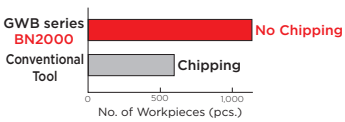
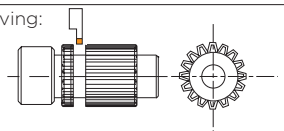
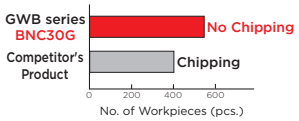
Grade	Application Range	Features	HV(GPa)	TRS(GPa)
BN2000	Continuous Grooving	General-purpose grade with superior wear resistance	31 to 34	1.0 to 1.1
BNC30G	Interrupted Grooving	Grade suited to interrupted grooving. Features tough substrate with special ceramic coating that exhibits both peel-off and wear resistance.	33 to 35	1.1 to 1.2

Recommended Cutting Conditions

Cutting Conditions	H Hardened Steel
Cutting Speed vc (m/min)	80 to 120
Feed Rate f (mm/rev)	0.04 to 0.08

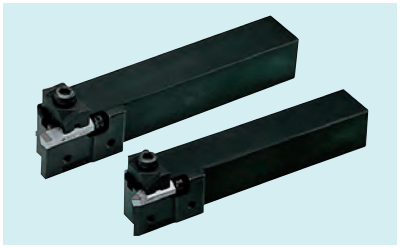
*In order to avoid thermal cracking of the SUMIBORON cutting edge during interrupted cutting, ensure that the work material is thoroughly dry before cutting.

Application Examples

Tooling	Work Material	Tool Cat. No.	Cutting Conditions	Tool Life Comparison
Shaft Grooving: Continuous  Required Surface Roughness for Groove Sides: Ra 0.4µm	Carburised steel 58 to 62 HRC	CGAR1504200 BN2000	vc: 120m/min f: 0.05mm/rev Groove Depth: 2mm Dry	
Spline Grooving: Interrupted 	Carburised steel 58 to 62 HRC	CGAR1504200 BNC30G	vc: 100m/min f: 0.05mm/rev Groove Depth: 1.6mm Dry	

N·m Recommended Tightening Torque (N·m)

BNGG series



■ Features

- **Improved rigidity for longer tool life**
  Strong clamping reduces insert fracture and holder chatter
- **Enhanced tooling for 2mm fine grooves or threading**
  Grooving and threading can be done by changing the support

External CBN

Hardened Steel, Shallow Grooves
Clamp-on

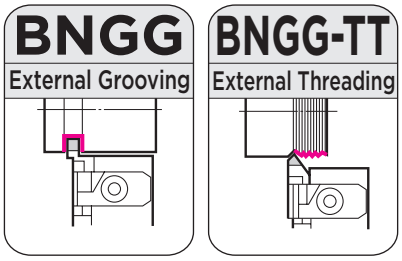


Fig 1 (Grooving)

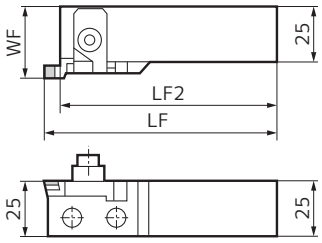


Fig 2 (Threading)

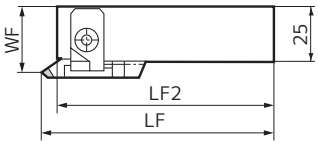


Figure shows right-handed (R) tool.

Holder

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Cutting Edge Distance WF	Overall Length LF	Overall Length 2 LF2	Applicable Insert	Fig
Grooving	**BNGG R/L2525-200**	●		30.5	150	145	BNGNT0200 R/L	1
	R/L2525-250	●		30.5	150	145	BNGNT0250 R/L	1
	R/L2525-300	●		30.5	150	145	BNGNT0300 R/L	1
	R/L2525-400	●		30.5	151	145	BNGNT0400 R/L	1
	R/L2525-500	●		30.5	151	145	BNGNT0500 R/L	1
	R/L2525-600	●		30.5	152	145	BNGNT0600 R/L	1
Threading	**BNGG R/L2525-TT**	●		28.5	150	145	BNTT1020 R/L, BNTT1530 R/L	2

Inserts are not included with the tool holders.
* Holder body is universal. The holder can be configured for different groove widths or threading by changing the support.

Insert (SUMIBORON)

Dimensions (mm)

	Cat. No.	BN2000 R	BN2000 L	BNX20 R	BNX20 L	BN350 R	BN350 L	Width of Cut CW	Groove Depth CDX	Corner Radius RE	Overall Length L	Cutting Edge Distance WF3	Applicable Holder	Fig
Grooving	**BNGNT0200 R/L**	●				●		**2.0**	4.0	0.2	25	6.0	BNGG R/L 2525-200	1
	BNGNT0250 R/L	●				●		**2.5**	4.0	0.2	25	6.0	BNGG R/L 2525-250	1
	BNGNT0300 R/L	●				●		**3.0**	5.0	0.4	25	6.0	BNGG R/L 2525-300	1
	BNGNT0400 R/L	●				●		**4.0**	6.0	0.4	26	6.0	BNGG R/L 2525-400	1
	BNGNT0500 R/L	●				●		**5.0**	6.0	0.4	26	6.0	BNGG R/L 2525-500	1
	BNGNT0600 R/L	●				●		**6.0**	7.0	0.4	27	6.0	BNGG R/L 2525-600	1
Threading	**BNTT1020 R/L**	●						Pitch 1.0 to 2.0	0.14	25	4.0	BNGG R/L 2525-TT		2
	BNTT1530 R/L	●						Pitch 1.5 to 3.0	0.2	25	4.0			2

Fig 1 (Grooving)

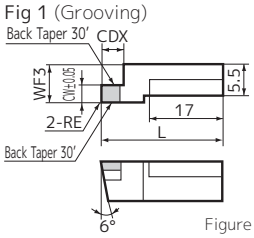


Fig 2 (Threading)

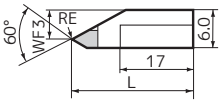


Figure shows right-handed (R) tool.

Parts

Applicable Holder	Support	Clamp Plate	Adjustment Screw	Spring	Cap Screw	Wrench	
BNGG R/L2525-200	BNGSR/L200	BNGCR/L	FMJ	GSP06	BX0615 (For Clamp Plate) BX0414 (For Support)	LH050 (For Clamp Plate) LH030 (For Support)	1.8×45
BNGG R/L2525-250	BNGSR/L250						
BNGG R/L2525-300	BNGSR/L300						
BNGG R/L2525-400	BNGSR/L400						
BNGG R/L2525-500	BNGSR/L500						
BNGG R/L2525-600	BNGSR/L600						
BNGG R/L2525-TT	BNGSR/LTT						

Recommended Cutting Conditions

• Grooving

Cutting Conditions	H Hardened Steel
Cutting Speed vc (m/min)	80 to 120
Feed Rate f (mm/rev)	0.03 to 0.07

• Threading

Cutting Conditions	H Hardened Steel
Cutting Speed vc (m/min)	80 to 120
Feed Rate f (mm)	Maximum Pitch 3.0

● mark: Standard stocked item (new product/expanded item)

FMU type/FMU-E type

High-speed Finishing for Cast Iron

- High speed finishing cutter for grey cast iron milling that uses removable cartridges for easy insert runout precision management
- Utilises SUMIBORON grade insert for cast iron machining with excellent wear and fracture resistance
- Available in shell type and small diameter type with shank

■ Features

- High-speed machining at vc = up to 2,000m/min
- Surpasses Rz 3.2 surface finish
- Safety structure for centrifugal force under high-speed cutting conditions
- Runout is less than 10µm: just attach the cartridge
- Easy runout adjustment using external setting
- Running cost is reduced because of the economical insert

■ Application Range

FC250 to FC300 (200 to 250HB) with pearlite matrix and grey cast iron (130 to 160HB) with ferrite matrix
[Example] Engine blocks, cylinder heads, etc.

■ Specifications

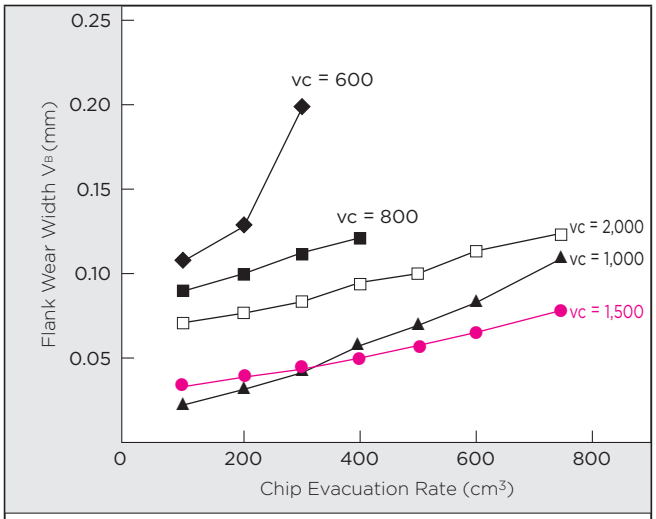
• **Shell**	ø80 to ø315mm (FMU type)
Shank type	ø40 to ø63mm (FMU-E type)
• **Regular Blade**	SNEW1203ADTR/L
• **Low Thrust Blade**	SNEW1203ADTR/L-S

■ Recommended Cutting Conditions

• **Cutting Speed**	vc = 800 to 2,000m/min
• **Feed Rate**	fz = 0.1 to 0.3mm/t
• **Depth of Cut**	ap = 0.5mm or less
• **Coolant**	Dry

■ Cutting Performance

• Wear Diagram



Work Material : FC250 240HB (Pearlite)
Cutting Speed : vc = 600 to 2,000m/min Feed Rate: fz = 0.15mm/t
Depth of Cut : ap = 0.5mm Dry

FMU type/FMU-E type

K Cast Iron

Rake Angle	Radial	2°
	Axial	8°

0.5mm 45°

Face Milling

Fig 1

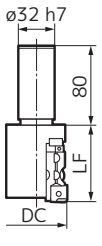


Fig 2

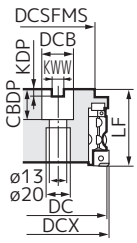


Fig 3

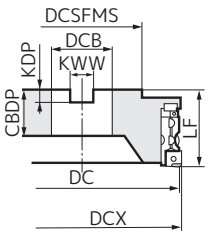


Fig 4

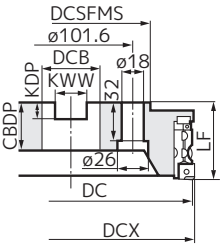
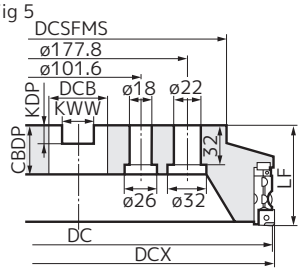


Fig 5



Body

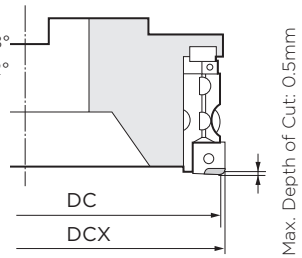
Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**FMU 4040ER**	●	37.2	**40**	—	63	—	—	—	—	2	1.0	1
	4050ER	●	47.2	**50**	—	63	—	—	—	—	3	1.2	1
	4063ER	●	60.2	**63**	60	63	**25.4**	9.5	6	25	4	1.0	2
	FMU 4080R	●	**80**	82.8	60	63	**25.4**	9.5	6	25	6	1.7	2
	4100R	●	**100**	102.8	76	63	**31.75**	12.7	8	38	8	2.5	3
	4125R	●	**125**	127.8	75	63	**38.1**	15.9	10	38	10	3.9	3
	4160R	●	**160**	162.8	100	63	**50.8**	19.1	11	38	12	6.3	3
	4200R	●	**200**	202.8	130	63	**47.625**	25.4	14	40	16	9.3	4
	4250R		**250**	252.8	130	63	**47.625**	25.4	14	40	20	14.5	4
	4315R		**315**	317.8	240	80	**47.625**	25.4	14	40	24	25.0	5

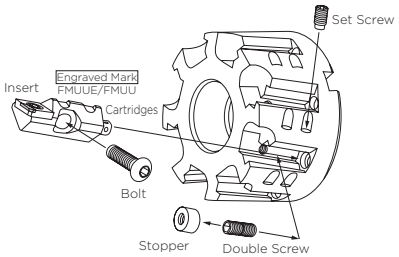
Inserts are sold separately.

Max. Depth of Cut

Approach Angle : 0°
Axial Rake Angle : +8°
Radial Rake Angle : +2°



Structure



Insert

Dimensions (mm)

Grade Classification		SUMIBORON	
Process	High-speed/Light Cutting	K	K
	Medium Cutting	K	K
	Roughing		

Cat. No.	BN7125	BN7000	Fig
SNEW1203ADTR	●	▲	1
1203ADTR-S	●	▲	2

-S denotes a low-thrust insert.

Fig 1

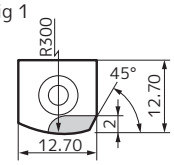
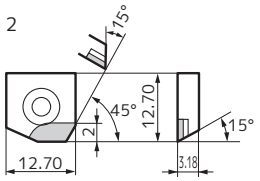


Fig 2

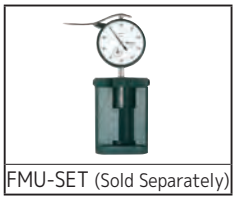


Cartridges

Cartridges	Flat Insert Screw		Adjustment Bolt	O-ring	Wrench	Wrench
		N·m			 (For Flat Insert Screw)	
FMUU(E)*	BFTX0509N	**5.0**	FMUJ	P3	TTX20	TH015

* FMU4040ER/4050ER/4063ER use FMUUE type cartridges.
* FMUU/FMUUE are pre-assembled with flat screws and adjustment screws (with O-rings attached).

Setting Gauge



FMU-SET (Sold Separately)

*Dial gauge is not included.

Parts

Bolt	Set Screw	Stopper	Double Screw	Wrench	Wrench	Wrench (Radial)	Anti-seizure Cream
				 (For Cartridges)	 (For Set Screws)	 (For Stoppers)	
BH0620*	BTD0609	FMUE	WB5-10	TH040	LH030	LH025	SUMI-P

*FMU4040ER, 4050ER and 4063ER use BH0615 bolts.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Grey Cast Iron	250HB	800-**1,400**-2,000	0.10-**0.20**-0.30	BN7125(Dry)

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

FM(F) type

K Cast Iron

Rake Angle		
	Radial	2°
	Axial	8°

0.5mm 45°

Face Milling

Fig 1

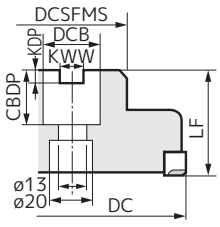


Fig 2

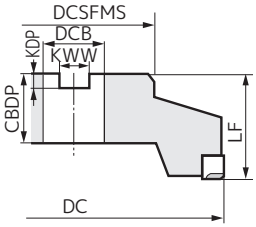


Fig 3

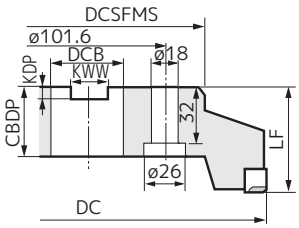
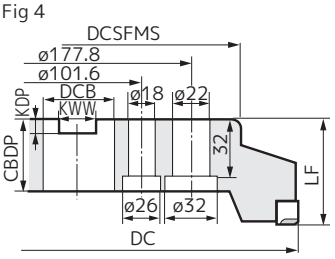


Fig 4



High-speed Finishing for Cast Iron

- Specially designed cutting edge shape combined with SUMIBORON grade for cast iron machining, realising high-speed milling of grey cast iron.

Body

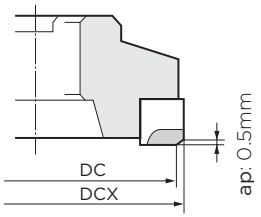
Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**FM 5080 R/L**	●		**80**	82.8	60	50	**25.4**	9.5	6	25	6	1.6	1
	5100 R/L	●		**100**	102.8	75	50	**31.75**	12.7	8	32	8	2.4	2
	5125 R/L	●		**125**	127.8	75	63	**38.1**	15.9	10	38	10	3.4	2
	5160 R/L	●		**160**	162.8	100	63	**50.8**	19.1	11	38	12	5.6	2
	5200 R/L			**200**	202.8	130	63	**47.625**	25.4	14	40	16	8.3	3
	5250 R/L			**250**	252.8	130	63	**47.625**	25.4	14	40	20	14.3	3
	5315 R/L			**315**	317.8	240	80	**47.625**	25.4	14	40	24	27.8	4
	FMF 5125 R/L			**125**	127.8	75	63	**38.1**	15.9	10	38	12	3.4	2
	5160 R/L			**160**	162.8	100	63	**50.8**	19.1	11	38	16	5.6	2
	5200 R/L			**200**	202.8	130	63	**47.625**	25.4	14	40	20	8.3	3
	5250 R/L			**250**	252.8	130	63	**47.625**	25.4	14	40	24	14.3	3
	5315 R/L			**315**	317.8	240	80	**47.625**	25.4	14	40	28	27.8	4

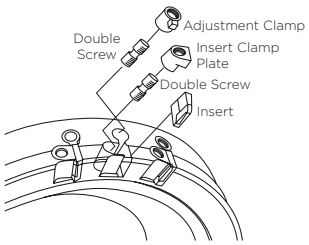
Inserts are sold separately.

Body

Approach Angle : 0°
Axial Rake Angle : +8°
Radial Rake Angle : +2°



Structure



Insert

Dimensions (mm)

Grade Classification		SUMIBORON				
Process	High-speed/Light Cutting	K		K		
	Medium Cutting	K		K		
	Roughing					
Cat. No.		BN7125 R	BN7125 L	BN7000 R	BN7000 L	Fig
SNEN 1504ADT R/L		●		▲		1
1504ADT R/L-S		●		▲		2

Fig 1

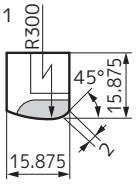
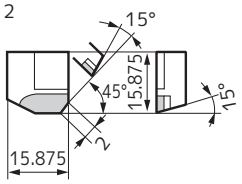


Fig 2



Parts

Applicable Cutter	Insert Clamp Plate	Adjustment Clamp	Adjustment Screw	Double Screw	Wrench	Wrench
FM(F) 5080R/L	FMW	—	FMJ	WB7F-20TL	TT25	1.8 x 45
FM(F) 5100R/L to FM(F) 5315R/L		FME	—			—

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

RM type

Rake Angle	Radial	-6° 45'
	Axial	-5° 45'

3mm 75°

Face Milling

Fig 1

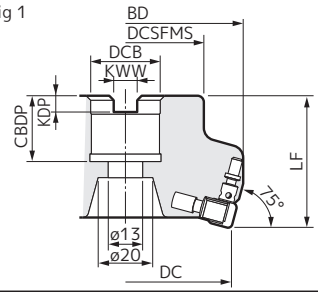
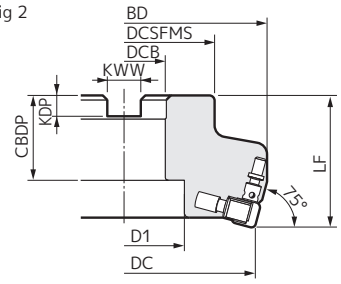


Fig 2



For High-speed, High-efficiency Milling of Cast Iron

● High-efficiency Milling of Grey Cast Iron
- Utilises solid SUMIBORON for high-speed cutting of vc = 1,500m/min
- High speed roughing with depth of cut up to 3.0mm
- Wiper insert for high-speed finishing

● Low Cost
- Economical double-sided insert with 8 usable corners
- Insert can be reground and used again

● Simple Runout Adjustment Mechanism
- Simple design for direct insert mounting
- Easy yet precise runout precision adjustment

Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Maximum Spindle Speed (min⁻¹)	Weight (kg)	Fig
Inch	**RM 3080R**		**80**	90	60	50	**25.4**	9.5	6	25	—	6	9,000	1.6	1
	RM 3100R		**100**	110	70	50	**31.75**	12.7	8	32	46	8	8,000	2.1	2
	3125R		**125**	135	80	63	**38.1**	15.9	10	38	59	10	7,000	3.9	2
	3160R		**160**	170	100	63	**50.8**	19.1	11	38	80	12	6,000	5.9	2

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		SUMIBORON	
Process	High-speed/Light Cutting	K	K
	Medium Cutting	K	K
	Roughing	K	K
Cat. No.		BNS8125	BNC8115
SNGN 090308		●	●
090312		●	●
SNEN 090308W		●	●

Fig 1

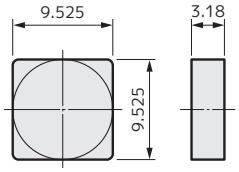
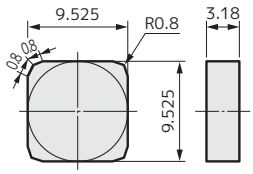
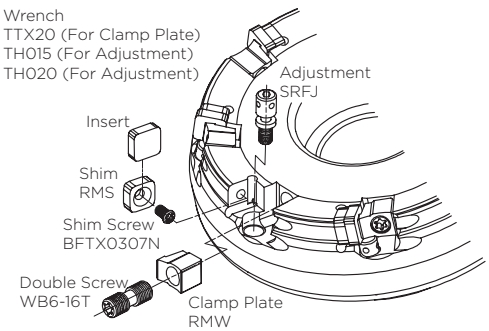


Fig 2 Wiper Insert





Parts

Shim	Shim Screw		Clamp Plate	Double Screw	Adjustment	Wrench (For Clamp Plate)	Wrench (For Adjustment)	Wrench (For Adjustment)
		N·m						
RMS	BFTX0307N	**2.0**	RMW	WB6-16T	SRFJ	TTX20	TH015	TH020

⚠ Precautions for Use

- Do not use inserts with different catalogue numbers, such as a mix of standard and wiper inserts, on a single cutter setting.
- New and reground inserts cannot be mixed for use. Use either only new inserts or only reground inserts. Inserts can only be reground once (inscribed circle dimension must be at least 9.125mm).

For hardened steel machining, use the SEC-ACE MILL DNF series.
Body: ☞H45 Insert: ☞L120

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Grey Cast Iron	250HB	800- **1,150** -1,500	0.05- **0.13** -0.20	BNS8125 (Dry)

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

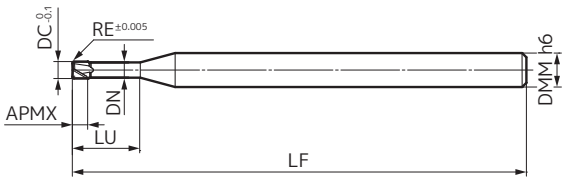
N·m Recommended Tightening Torque (N·m)

BNBR type

Pre-hardened Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Hardened Steel 60 to 65HRC

2 Flutes | CBN | Corner r | Shoulder Milling | Face Milling | Profiling

Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Corner Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Wiper Edge	Fig
BNBR 2D020R005-0054	●	0.2	0.05	0.1	0.5	50	0.17	4	No	1
2D030R005-0054	●	0.3	0.05	0.15	0.5	50	0.27	4	No	1
2D040R005-0054	●	0.4	0.05	0.2	0.5	50	0.37	4	No	1
2D050R005-0054	●	0.5	0.05	0.3	0.5	50	0.47	4	No	1
2D050R005-0154	●	0.5	0.05	0.3	1.5	50	0.47	4	No	1
BNBR 2D050R005-0254	●	0.5	0.05	0.3	2.5	50	0.47	4	No	1
2D050R010-0154	●	0.5	0.10	0.3	1.5	50	0.47	4	No	1
2D050R010-0254	●	0.5	0.10	0.3	2.5	50	0.47	4	No	1
2D100R005-0304	●	1.0	0.05	0.7	3.0	50	0.97	4	Yes	1
2D100R005-0504	●	1.0	0.05	0.7	5.0	50	0.97	4	Yes	1
BNBR 2D100R010-0304	●	1.0	0.10	0.7	3.0	50	0.97	4	Yes	1
2D100R010-0504	●	1.0	0.10	0.7	5.0	50	0.97	4	Yes	1
2D100R020-0304	●	1.0	0.20	0.7	3.0	50	0.97	4	Yes	1
2D100R020-0504	●	1.0	0.20	0.7	5.0	50	0.97	4	Yes	1
2D100R030-0304	●	1.0	0.30	0.7	3.0	50	0.97	4	Yes	1
BNBR 2D100R030-0504	●	1.0	0.30	0.7	5.0	50	0.97	4	Yes	1
2D150R010-0454	●	1.5	0.10	1.2	4.5	50	1.47	4	Yes	1
2D150R010-0754	●	1.5	0.10	1.2	7.5	50	1.47	4	Yes	1
2D150R020-0454	●	1.5	0.20	1.2	4.5	50	1.47	4	Yes	1
2D150R020-0754	●	1.5	0.20	1.2	7.5	50	1.47	4	Yes	1
BNBR 2D150R030-0454	●	1.5	0.30	1.2	4.5	50	1.47	4	Yes	1
2D150R030-0754	●	1.5	0.30	1.2	7.5	50	1.47	4	Yes	1
2D200R010-0604	●	2.0	0.10	1.5	6.0	50	1.97	4	Yes	1
2D200R020-0604	●	2.0	0.20	1.5	6.0	50	1.97	4	Yes	1
2D200R030-0604	●	2.0	0.30	1.5	6.0	50	1.97	4	Yes	1
BNBR 2D200R050-0604	●	2.0	0.50	1.5	6.0	50	1.97	4	Yes	1

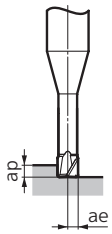
Grade: BNX20

Identification Code

BNBR 2 D050 R010 - 015 4

Series Code	Number of Flutes	Dia.	Corner Radius	Neck Length	Shank Dia.

BNBR type



Recommended Cutting Conditions

1. Use a machine with high rigidity for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply.
   As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.

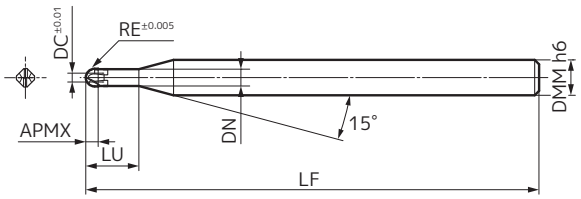
Work Material			STAVAX, NAK80, SKD61 (Up to 52HRC)				ELMAX, DC53, SKD11 Modified (Up to 62HRC)				YXR3, SKH (Up to 70HRC)			
DC (mm)	RE (mm)	LU (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	ae(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	ae(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	ae(mm)
0.2	0.05	0.5	40,000	400	0.005	0.03	40,000	400	0.005	0.03	40,000	250	0.005	0.02
0.3	0.05	0.5	40,000	500	0.010	0.05	40,000	500	0.010	0.05	40,000	300	0.005	0.03
0.4	0.05	0.5	40,000	600	0.015	0.1	40,000	600	0.015	0.1	40,000	400	0.01	0.05
0.5	0.05	0.5	40,000	600	0.02	0.15	40,000	600	0.02	0.15	40,000	400	0.01	0.1
	0.05	1.5	40,000		0.02	0.1	40,000		0.02	0.1	35,000			0.05
	0.1		40,000				40,000				35,000			
	0.05	2.5	40,000		0.01	0.05	40,000		0.01	0.05	35,000			
	0.1		40,000				40,000				35,000			
1.0	0.05	3.0	35,000	800	0.03	0.3	35,000	800	0.03	0.2	30,000	600	0.01	0.1
	0.1		35,000				35,000				30,000			
	0.2		35,000				35,000				30,000			
	0.3		35,000				35,000				30,000			
	0.05	5.0	35,000		0.02	0.2	35,000	800	0.02	0.1	30,000	600	0.01	0.1
	0.1		35,000				35,000				30,000			
	0.2		35,000				35,000				30,000			
	0.3		35,000				35,000				30,000			
1.5	0.1	4.5	26,000	800	0.03	0.5	26,000	800	0.03	0.3	20,000	600	0.02	0.3
	0.2		26,000				26,000				20,000			
	0.3		26,000				26,000				20,000			
	0.1	7.5	26,000		0.03	0.5	26,000	800	0.03	0.3	20,000	600	0.02	0.3
	0.2		26,000				26,000				20,000			
	0.3		26,000				26,000				20,000			
2.0	0.1	6.0	20,000	800	0.03	0.7	20,000	800	0.03	0.7	15,000	600	0.03	0.7
	0.2		20,000				20,000				15,000			
	0.3		20,000				20,000				15,000			
	0.5		20,000				20,000				15,000			

BNBP type

Pre-hardened Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Hardened Steel 60 to 65HRC

2 Flutes | CBN | Ballnose R | Shoulder Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Fig
BNBP 2R020-0124	●	**0.20**	**0.4**	0.3	1.2	50	0.37	4	1
2R020-0126	●	**0.20**	**0.4**	0.3	1.2	50	0.37	6	1
2R020-0204	●	**0.20**	**0.4**	0.3	2.0	50	0.37	4	1
2R020-0304	●	**0.20**	**0.4**	0.3	3.0	50	0.37	4	1
2R020-0404	●	**0.20**	**0.4**	0.3	4.0	50	0.37	4	1
BNBP 2R030-0154	●	**0.30**	**0.6**	0.4	1.5	50	0.57	4	1
2R030-0156	●	**0.30**	**0.6**	0.4	1.5	50	0.57	6	1
2R030-0204	●	**0.30**	**0.6**	0.4	2.0	50	0.57	4	1
2R030-0304	●	**0.30**	**0.6**	0.4	3.0	50	0.57	4	1
2R030-0404	●	**0.30**	**0.6**	0.4	4.0	50	0.57	4	1
BNBP 2R030-0504	●	**0.30**	**0.6**	0.4	5.0	50	0.57	4	1
2R030-0604	●	**0.30**	**0.6**	0.4	6.0	50	0.57	4	1
2R050-0254	●	**0.50**	**1.0**	0.6	2.5	50	0.97	4	1
2R050-0256	●	**0.50**	**1.0**	0.6	2.5	50	0.97	6	1
2R050-0304	●	**0.50**	**1.0**	0.6	3.0	50	0.97	4	1
BNBP 2R050-0404	●	**0.50**	**1.0**	0.6	4.0	50	0.97	4	1
2R050-0604	●	**0.50**	**1.0**	0.6	6.0	50	0.97	4	1
2R050-0804	●	**0.50**	**1.0**	0.6	8.0	50	0.97	4	1
2R075-0404	●	**0.75**	**1.5**	0.9	4.0	50	1.47	4	1
2R075-0406	●	**0.75**	**1.5**	0.9	4.0	50	1.47	6	1
BNBP 2R100-0554	●	**1.00**	**2.0**	1.4	5.5	50	1.97	4	1
2R100-0556	●	**1.00**	**2.0**	1.4	5.5	50	1.97	6	1
2R100-0804	●	**1.00**	**2.0**	1.4	8.0	50	1.97	4	1

Grade: BN350

Identification Code

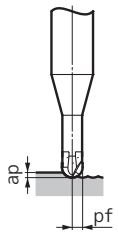
BNBP 2 R030 - 015 4

Series Code	Number of Flutes	Ballnose Radius		Neck Length	Shank Dia.

BNBP type

Recommended Cutting Conditions

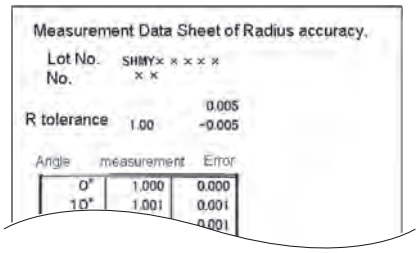
1. Use a machine with high rigidity for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply.
   As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.



Work Material		STAVAX, NAK80, SKD61 (Up to 52HRC)				ELMAX, DC53, SKD11 Modified (Up to 62HRC)				YXR3, SKH (Up to 70HRC)			
RE (mm)	LU (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	pf(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	pf(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	ap(mm)	pf(mm)
0.2	1.2	40,000	1,000	0.005	0.010	40,000	800	0.005	0.010	40,000	600	0.005	0.005
	2.0	40,000	800	0.005	0.010	40,000	600	0.005	0.010	40,000	400	0.005	0.005
	3.0	40,000	600	0.005	0.010	40,000	500	0.005	0.010	40,000	300	0.005	0.005
	4.0	40,000	500	0.005	0.010	40,000	400	0.005	0.005	40,000	200	0.005	0.005
0.3	1.5	40,000	1,600	0.020	0.020	40,000	1,400	0.010	0.020	40,000	1,200	0.010	0.020
	2.0	40,000	1,500	0.010	0.020	40,000	1,300	0.010	0.020	40,000	1,100	0.010	0.010
	3.0	40,000	1,400	0.010	0.020	40,000	1,200	0.010	0.020	40,000	1,000	0.010	0.010
	4.0	30,000	1,200	0.010	0.010	30,000	1,000	0.010	0.010	30,000	700	0.005	0.010
	5.0	30,000	800	0.010	0.010	30,000	700	0.005	0.010	30,000	600	0.005	0.005
	6.0	30,000	600	0.005	0.010	30,000	500	0.005	0.005	30,000	400	0.005	0.005
0.5	2.5	40,000	2,800	0.040	0.050	40,000	2,800	0.030	0.040	40,000	2,200	0.020	0.030
	3.0	40,000	2,600	0.040	0.050	40,000	2,600	0.030	0.040	40,000	2,100	0.020	0.030
	4.0	40,000	2,400	0.030	0.050	40,000	2,400	0.020	0.030	40,000	2,000	0.020	0.020
	6.0	25,000	1,500	0.020	0.030	25,000	1,500	0.010	0.020	25,000	1,300	0.010	0.010
	8.0	16,000	1,200	0.020	0.020	16,000	1,100	0.010	0.020	16,000	850	0.010	0.010
0.75	4.0	32,000	2,400	0.030	0.030	32,000	2,200	0.020	0.030	32,000	2,000	0.020	0.020
1.0	5.5	40,000	4,000	0.050	0.050	40,000	4,000	0.030	0.030	40,000	3,000	0.020	0.030
	8.0	32,000	3,000	0.030	0.050	32,000	2,600	0.020	0.030	32,000	2,200	0.010	0.020

■ Radius Accuracy Inspection Test Results

Radius accuracy inspection report is attached as below with the ballnose type.


Measurement Data Sheet of Radius accuracy.

Lot No. SHMY× × × × ×
No. × ×

R tolerance 1.00 0.005 −0.005

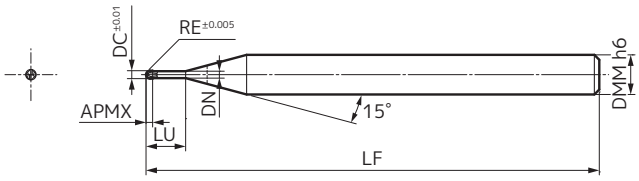
Angle	measurement	Error
0°	1.000	0.000
10°	1.001	0.001
		0.001

BNBC type

Copper Alloy

2 Flutes | CBN | Ballnose R | Shoulder Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Neck Dia. DN	Shank Dia. DMM	Fig
BNBC 2R010-0034	●	**0.1**	**0.2**	0.2	0.3	50	0.17	4	1
2R010-0104	●	**0.1**	**0.2**	0.2	1.0	50	0.17	4	1
2R020-0054	●	**0.2**	**0.4**	0.3	0.5	50	0.37	4	1
2R020-0204	●	**0.2**	**0.4**	0.3	2.0	50	0.37	4	1
2R030-0104	●	**0.3**	**0.6**	0.4	1.0	50	0.57	4	1
BNBC 2R030-0304	●	**0.3**	**0.6**	0.4	3.0	50	0.57	4	1
2R050-0304	●	**0.5**	**1.0**	0.6	3.0	50	0.97	4	1

Grade: BN700

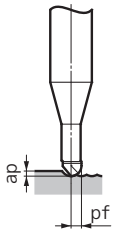
Identification Code

BNBC 2 R030 - 010 4

Series Code	Number of Flutes	Ballnose Radius		Neck Length	Shank Dia.

Recommended Cutting Conditions

1. Use a machine with high rigidity for stable cutting.
2. Non-water-soluble cutting oil is recommended. Use as a mist or with external coolant supply.
   As sparks or tool breakage during machining may cause fire, be sure to take appropriate fire prevention measures.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.



Side Milling

Work Material / Cutting Conditions / Cat. No.	Copper Alloy			
	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Standard depth of cut (mm) ap	pf
BNBC 2R010-0034	20,000 -50,000	350	0.01	0.02
2R010-0104		350	0.007	0.015
BNBC 2R020-0054	20,000 -50,000	800	0.025	0.05
2R020-0204		700	0.02	0.03
BNBC 2R030-0104	20,000 -50,000	1,400	0.05	0.15
2R030-0304		1,200	0.04	0.1
BNBC 2R050-0304	20,000 -50,000	2,200	0.15	0.35