

BC8100 SERIES

CBN-TURNING INSERTS
FOR HARDENED STEELS



DIAEDGE

 **MITSUBISHI MATERIALS**

BC8100 SERIES

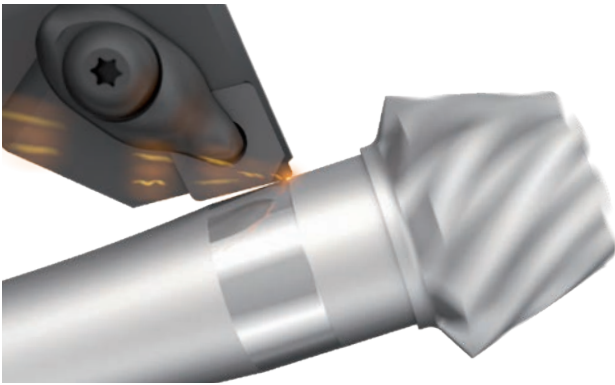
COATED CBN-SERIES FOR HARDENED STEEL TURNING

BC8105

HIGHEST ACCURACY

For continuous cutting

- Excellent surface finishes and close tolerances with long tool life
- For surface finishes up to Rz 2.4 (Ra 0.6)

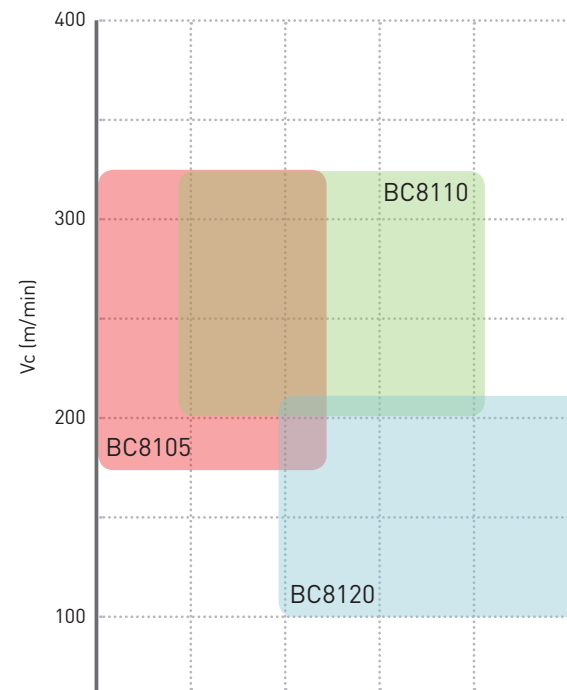
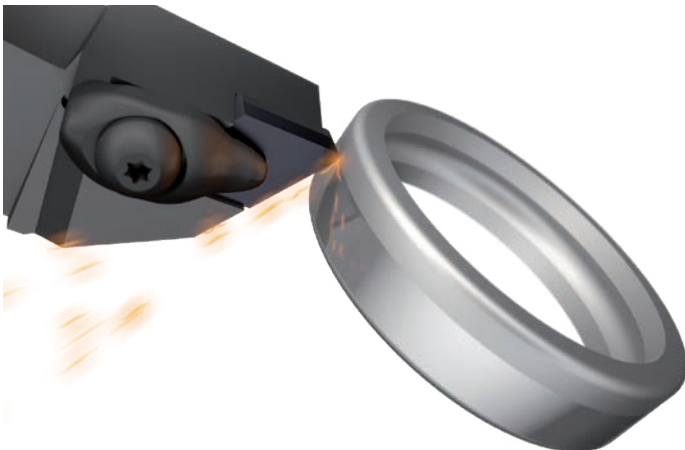


BC8110

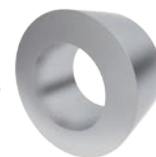
HIGH SPEED TURNING

For continuous and light interrupted cut

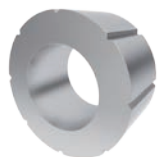
- Long and stable tool life for surface finishes under Rz 6.3



SUITABILITY FOR INTERRUPTED CUTTING

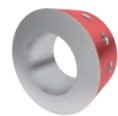
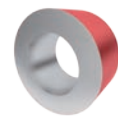


None



Light

SUITABILITY FOR FREQUENT IMPACTS



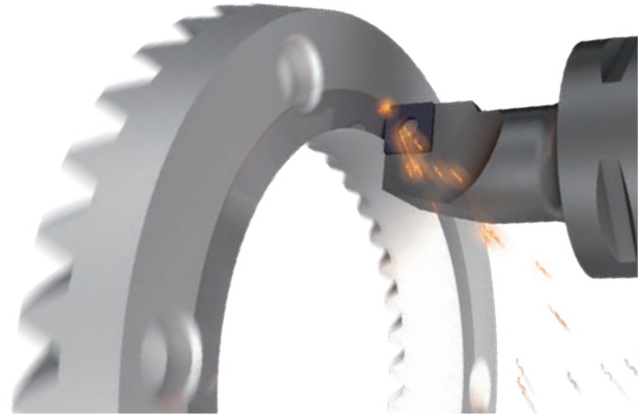
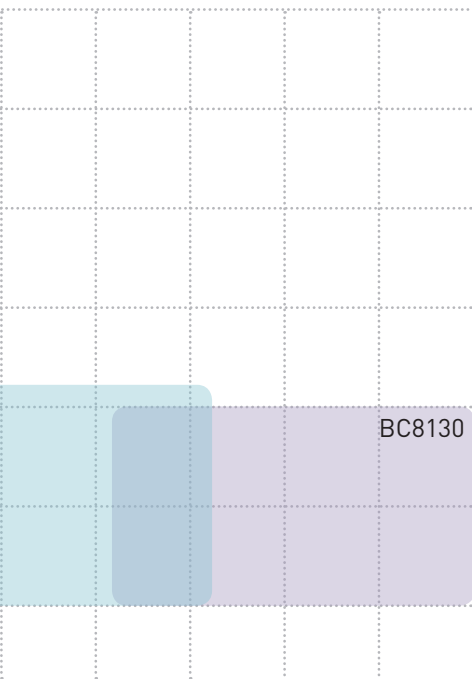
←
Low



BC8120

GENERAL APPLICATIONS

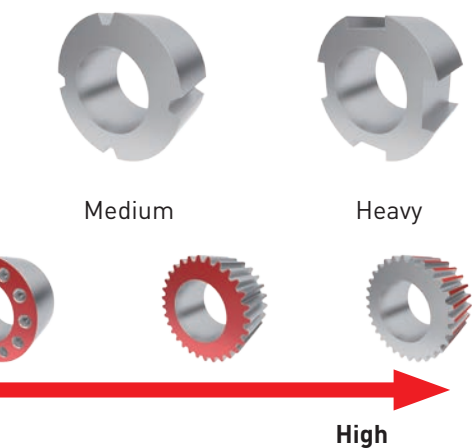
- For continuous to medium interrupted cutting
- 1st choice for roughing and pre-finishing



BC8130

TOUGH MACHINING

- For unstable applications and heavy interrupted cutting
- Tolerance accuracy held over a high no. of impacts



GRADES

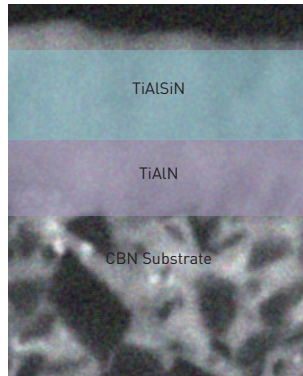
NEW ADVANCED CERAMIC COATING

BC8105



Excellent surface roughness without any welding by low friction coating.

BC8110



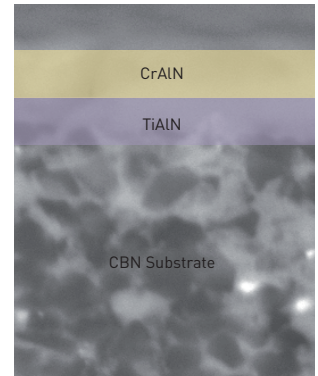
Longer tool life by high wear resistance for high speed machining.

BC8120



Well balanced longer tool life without coating peeling off.

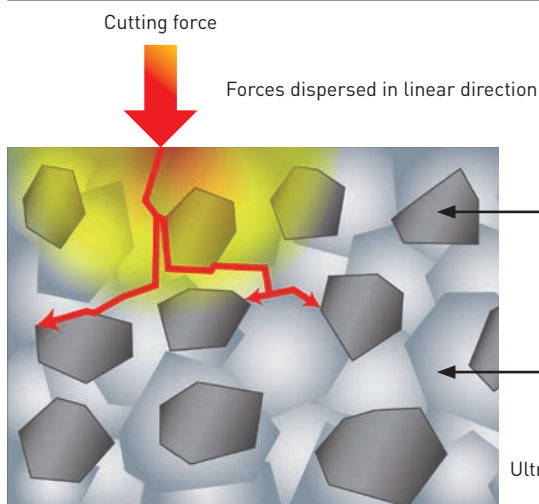
BC8130



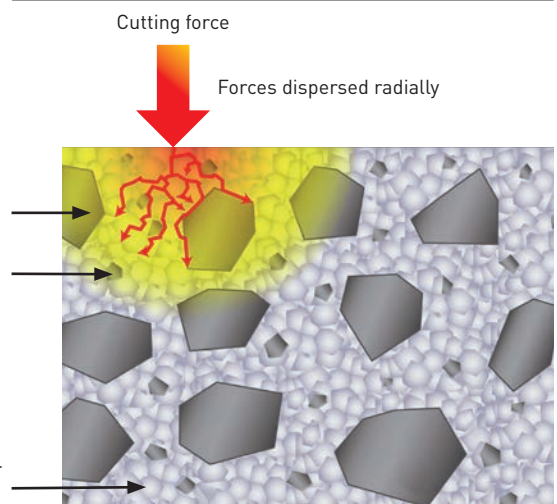
Avoiding chipping without coating peeling off.

OPTIMISED SUBSTRATE TECHNOLOGY

CONVENTIONAL



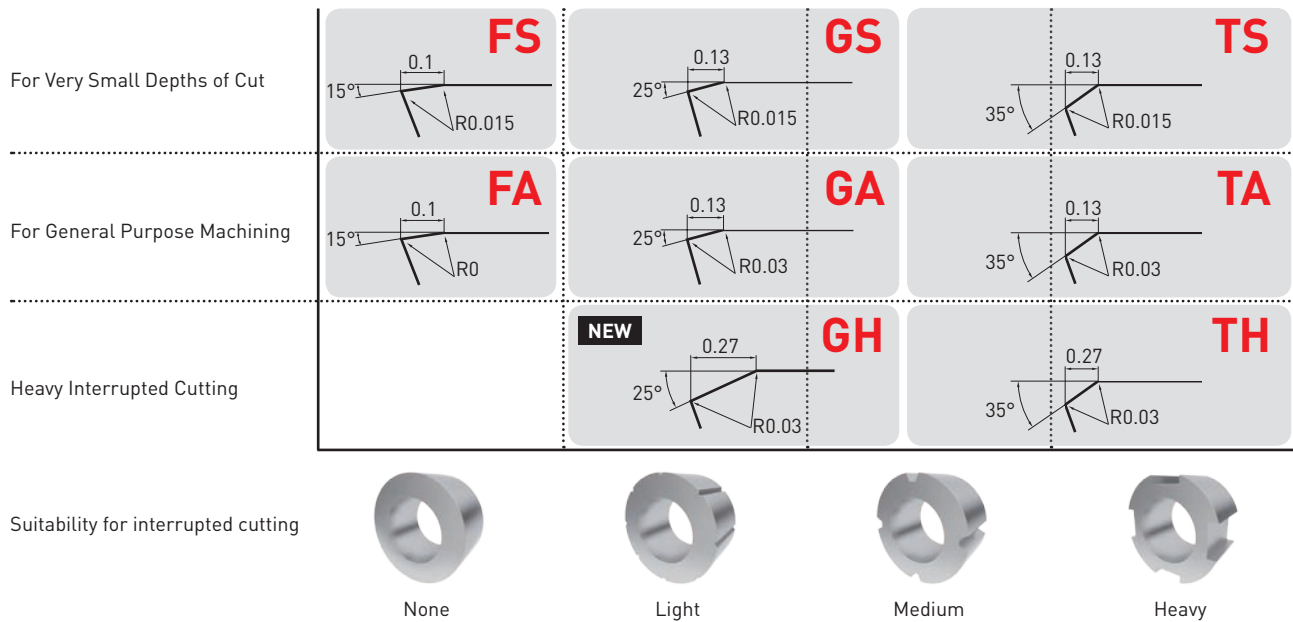
BC8100 SERIES



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

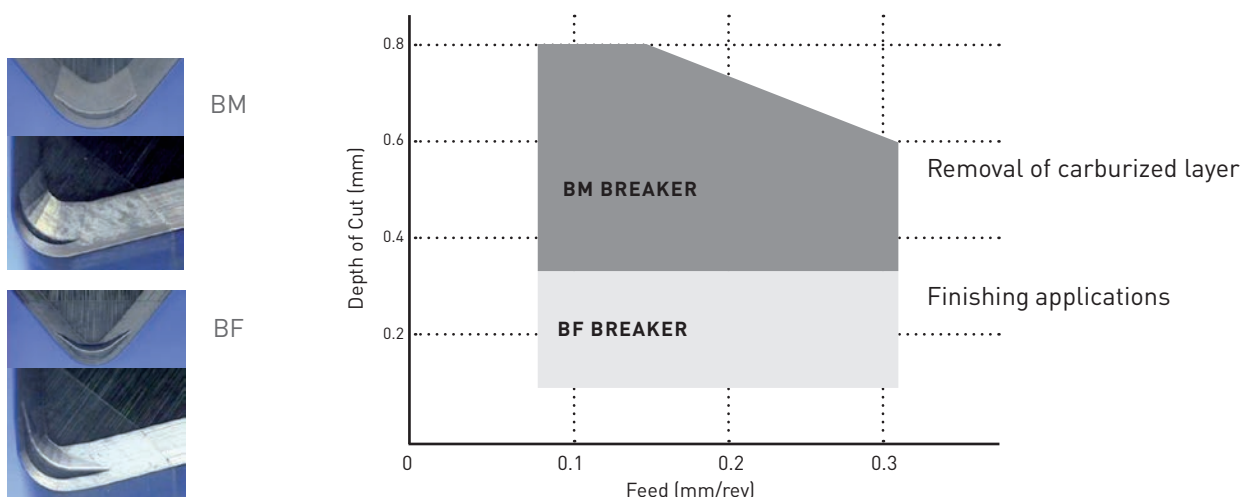
GEOMETRY

CUTTING EDGE PREPERATION



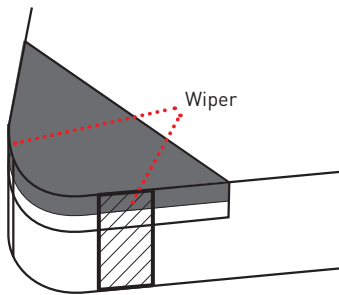
A variety of cutting edge preparations for all application

BM/BF BREAKER



Breaker system for excellent chip control when finishing, removing carburized layers and hard-soft machining.

WIPER INSERT



IMPROVING SURFACE FINISH

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

IMPROVING EFFICIENCY

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

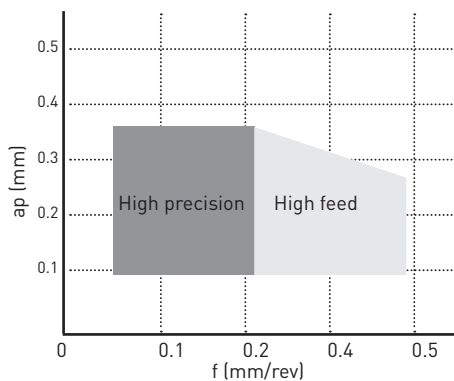
INCREASED TOOL LIFE

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

IMPROVING CHIP CONTROL

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

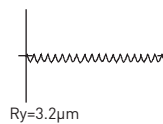
RECOMMENDED CUTTING CONDITIONS AND PERFORMANCE



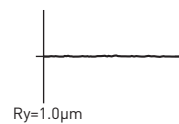
High precision finishing

Cutting Speed: 100m/min Feed: 0.1mm/rev
Depth of Cut: 0.1mm Dry Cutting

Without Wiper



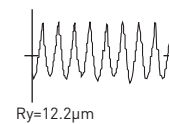
With Wiper



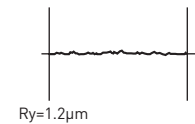
High feed machining

Cutting Speed: 100m/min Feed: 0.3mm/rev
Depth of Cut: 0.1mm Dry Cutting

Without Wiper

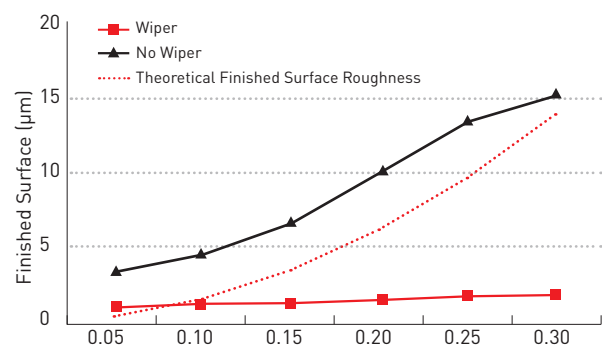


With Wiper



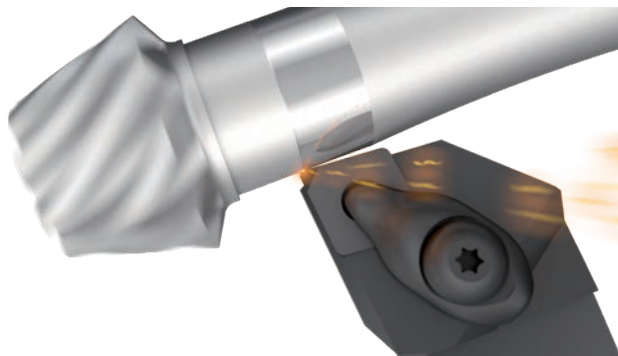
CUTTING PERFORMANCE

Insert	NP-CNGA120408
Workpiece Material	Hardened steel (HRC60)
Cutting mode	continuous
Cutting speed Vc (m/min)	120
Feed f (mm/rev)	various
Depth of cut ap (mm)	0.1
Coolant	Dry cutting



BC8105

HIGHEST ACCURACY



FOR CONTINUOUS CUTTING

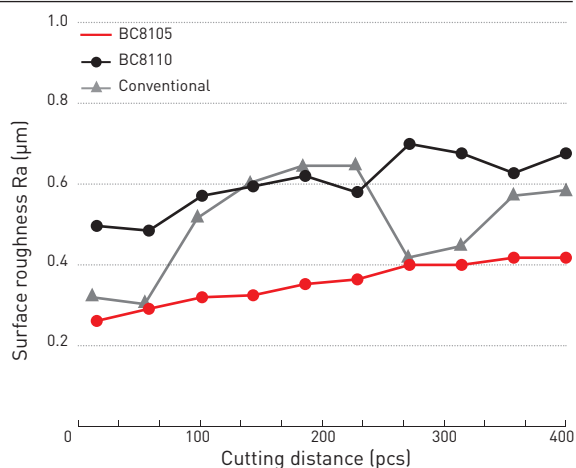
- Excellent Surface roughing and close tolerances over a long tool life
- for surface finish up to Rz 2.4 μm (Ra 0.6 μm)

SURFACE FINISH

Insert	NP-DNGA150608GS2
Workpiece Material	34Mn5 (60 HRC)
Cutting mode	continuous
Cutting speed Vc (m/min)	176
Feed f (mm/rev)	0.09
Depth of cut ap (mm)	0.15
Coolant	Emulsion



BC8105 is first choice for superior surface finishes

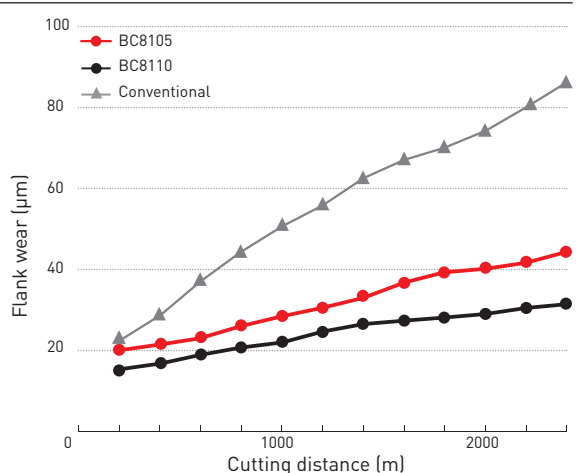


TOOL LIFE (FLANK WEAR)

Insert	NP-CNGA120408GS2
Workpiece Material	42CrMo4 (60 HRC)
Cutting mode	continuous
Cutting speed Vc (m/min)	200
Feed f (mm/rev)	0.05
Depth of cut ap (mm)	0.05
Coolant	Dry cutting



BC8105 offers an excellent wear resistance due to the new Miracle Sigma Technology



RECOMMENDED CUTTING CONDITIONS

Workpiece	Cutting Mode	Vc (m/min)				f (mm/rev)	ap (mm)	Coolant
		50	100	200	300			
Hardened Steel (Heat treated steel etc)	Continuous Cutting	----- ----- ----- -----				-0.15	-0.2	Dry, Wet

BC8110

HIGH SPEED TURNING

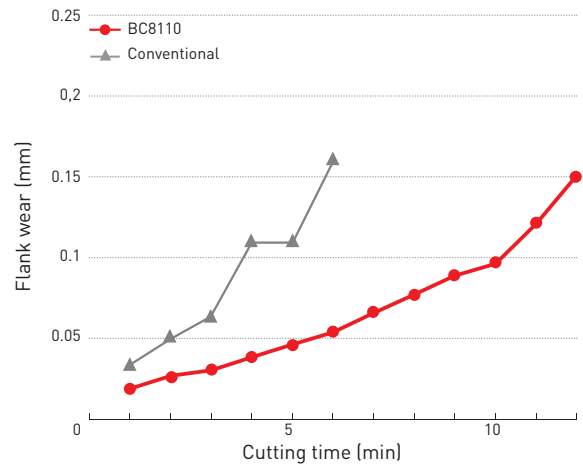


FOR CONTINUOUS CUTTING

- Long and stable tool life for surface finishes under Rz 6.3 μm
- Covers a wide application range for continuous cutting

TOOL LIFE (FLANK WEAR)

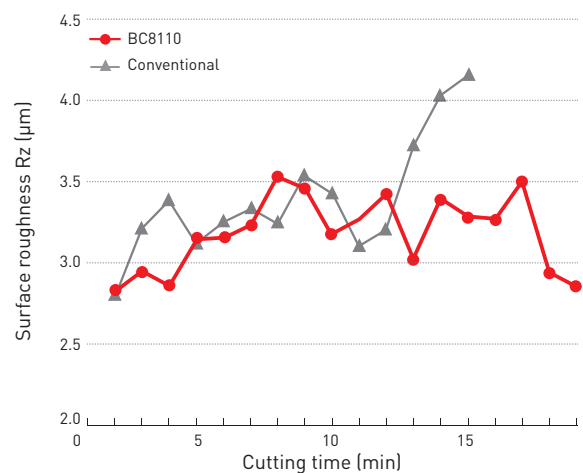
Insert	NP-CNGA120408GS2
Workpiece Material	42CrMo4 (60HRC)
Cutting mode	continuous
Cutting speed Vc (m/min)	250
Feed f (mm/rev)	0.10
Depth of cut ap (mm)	0.2
Coolant	Dry cutting



BC8110 is first choice for high speed finishing

SURFACE FINISH

Insert	NP-CNGA120408GS2
Workpiece Material	42CrMo4 (60HRC)
Cutting mode	continuous
Cutting speed Vc (m/min)	250
Feed f (mm/rev)	0.10
Depth of cut ap (mm)	0.2
Coolant	Dry cutting



Excellent surface finishes maintained during long continuous cutting

RECOMMENDED CUTTING CONDITIONS

Workpiece	Cutting Mode	Vc (m/min)				f (mm/rev)	ap (mm)	Coolant
		50	100	200	300			
Hardened Steel (Heat treated steel etc)	Continuous Cutting					-0.20	-0.35	Dry, Wet

BC8120

GENERAL APPLICATION

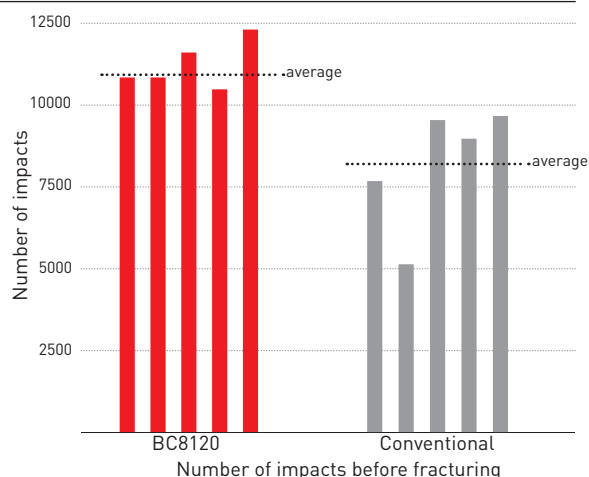


FOR CONTINUOUS AND LIGHT INTERRUPTED CUTTING

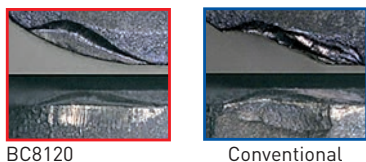
- 1st choice for roughing and pre-finishing
- Covers a wide application range between continuous and light-interrupted machining

TEST OF INTERRUPTED CUT

Insert	NP-CNGA120408GA2
Workpiece Material	42CrMo4 (60 HRC)
Cutting mode	continuous
Cutting speed Vc (m/min)	250
Feed f (mm/rev)	0.15
Depth of cut ap (mm)	0.1
Coolant	Dry cutting

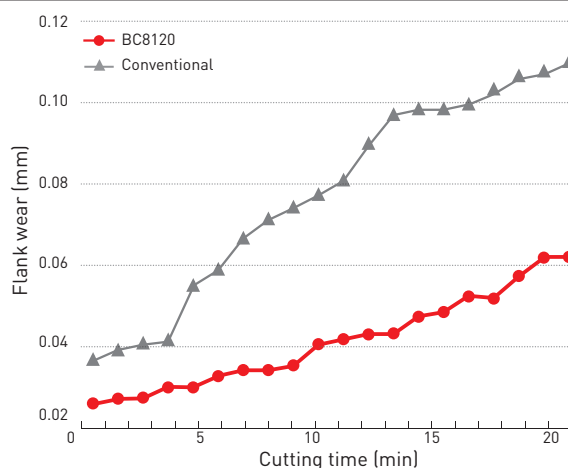


Cutting edge condition after 8000 impacts

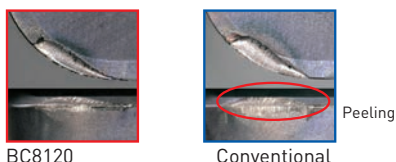


TOOL LIFE (FLANK WEAR)

Insert	NP-CNGA120408GA2
Workpiece Material	42CrMo4 (60 HRC)
Cutting mode	continuous
Cutting speed Vc (m/min)	150
Feed f (mm/rev)	0.10
Depth of cut ap (mm)	0.2
Coolant	Dry cutting



Cutting edge after 15 min.



RECOMMENDED CUTTING CONDITIONS

Workpiece	Cutting Mode	Vc (m/min)			f (mm/rev)	ap (mm)	Coolant
		50	100	200			
Hardened Steel (Heat treated steel etc)	Continuous Cutting	[Red bar from 100 to 200]			-0.3	-0.5	Dry, Wet
	Interrupted Cutting	[Red bar from 50 to 150]			-0.2	-0.3	Dry, Wet

BC8130

TOUGH MACHINING

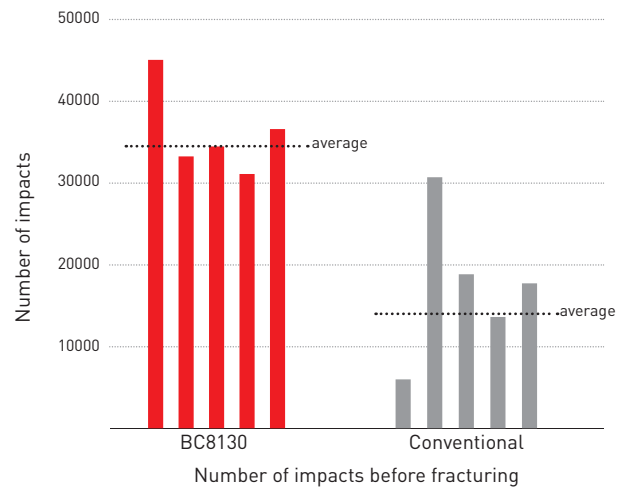


FOR UNSTABLE APPLICATIONS AND HEAVY INTERRUPTED CUTTING

- Tolerance accuracy maintained over a high number of impacts to the cutting edge.

HEAVY INTERRUPTED CUTTING (LABORATORY TEST)

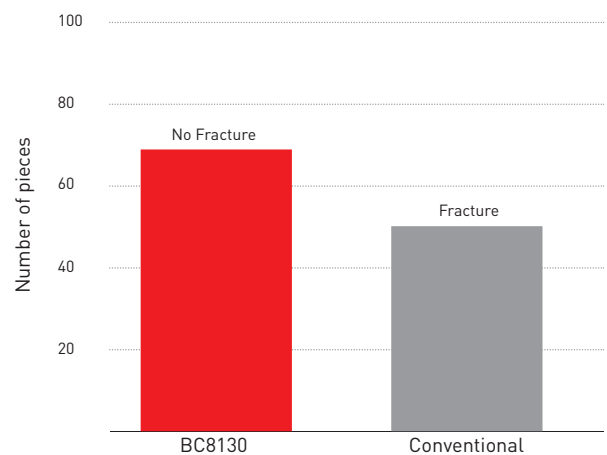
Insert	NP-CNGA120408GA2
Workpiece Material	42CrMo4 (60 HRC)
Cutting mode	Heavy Interrupted
Cutting speed Vc (m/min)	250
Feed f (mm/rev)	0.05
Depth of cut ap (mm)	0.1
Coolant	Wet Cutting



BC8130 provides stability up to 30000 impacts

HEAVY CUT

Insert	NP-CNGA120408TH2
Workpiece Material	C45 (58 HRC)
Cutting mode	Heavy Interrupted
Cutting speed Vc (m/min)	130
Feed f (mm/rev)	0.08
Depth of cut ap (mm)	0.15
Coolant	Wet Cutting



No fracturing after machining 70 pcs

RECOMMENDED CUTTING CONDITIONS

Workpiece	Cutting Mode	Vc (m/min)	f (mm/rev)	ap (mm)	Coolant
Hardened Steel (Heat treated steel etc)	Interrupted	100 - 150	~0.20	~0.30	Dry, Wet

IDENTIFICATION

FOR CBN INSERTS

NP-CNGA 120404 GA WS 4 JR

Insert shape

Insert size

Number of cutting edges

Insert Geometry

BM	BM Breaker
BF	BF Breaker
NP	Standard

Cutting edge preparation

GA	Continuous Cutting -
GS	Medium Interrupted
GH	Cutting

FA	Continuous Cutting
FS	



TA	Interrupted Cutting
TH	

Wiper

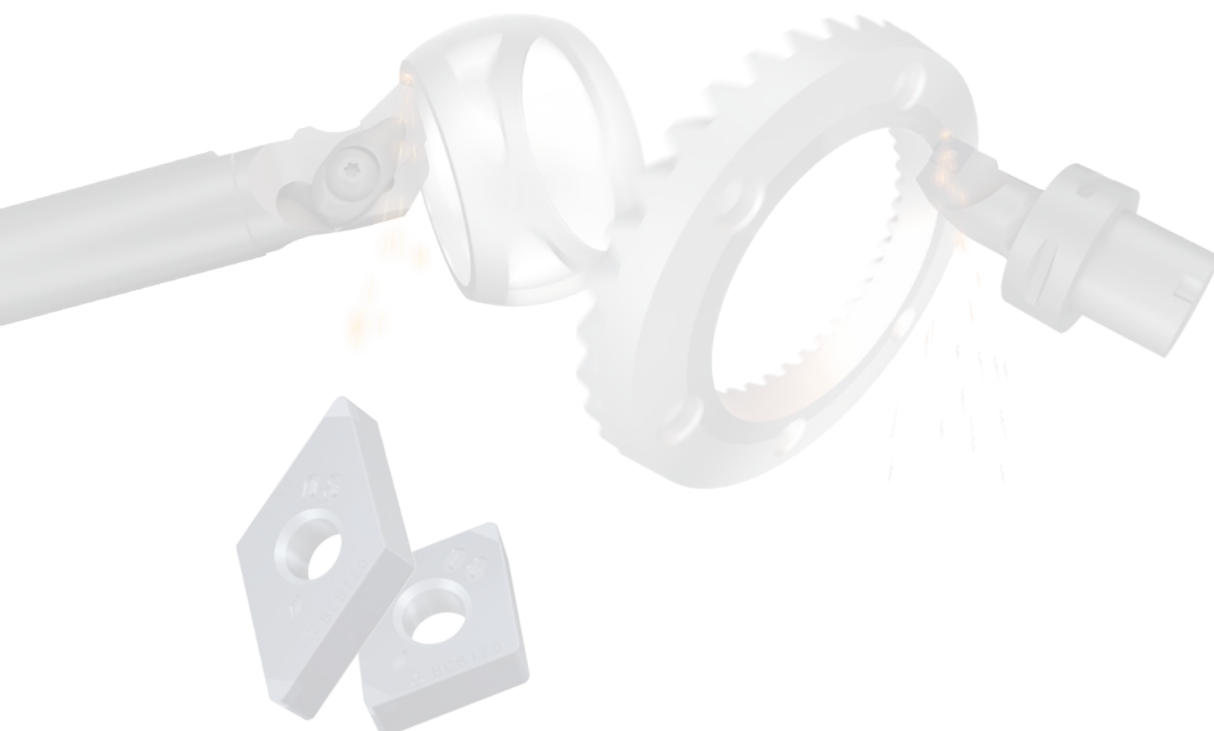
WS	With Wiper
FBWL	
GBWL	

No mark Without Wiper

Cutting Direction*

Figure	Symbol
	JR Right
	JL Left

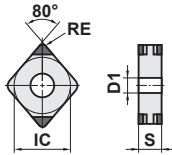
* Cutting edge angle 93°



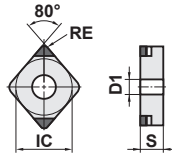
CNGA, CNGM

NEGATIVE INSERTS (WITH HOLE)

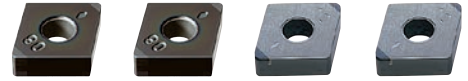
4 corner



2 corner



NEW PETIT CUT NEW PETIT CUT NEW PETIT CUT NEW PETIT CUT
NP_004 NP_00WS4 NP_002 NP_00WS2



(With Wiper)

(With Wiper)

NEW PETIT CUT NEW PETIT CUT

BM, BF NP_00FBWL2
NP_00GBWL2



(With Breaker) (With Wiper)

Order Number	BC8105	BC8110	BC8120	BC8130	Cutting Edges	IC	S	RE	D1
NP-CNGA120404GA4			●	●	4	12.7	4.76	0.4	5.16
NP-CNGA120408GA4			●	●	4	12.7	4.76	0.8	5.16
NP-CNGA120412GA4			●	●	4	12.7	4.76	1.2	5.16
NP-CNGA120404GS4	●	●			4	12.7	4.76	0.4	5.16
NP-CNGA120408GS4	●	●			4	12.7	4.76	0.8	5.16
NP-CNGA120412GS4	●	●			4	12.7	4.76	1.2	5.16
NP-CNGA120404GH4		★	★	●	4	12.7	4.76	0.4	5.16
NP-CNGA120408GH4		★	★	●	4	12.7	4.76	0.8	5.16
NP-CNGA120412GH4		★	★	●	4	12.7	4.76	1.2	5.16
NP-CNGA120404FS4	●	★	★		4	12.7	4.76	0.4	5.16
NP-CNGA120408FS4	●	★	★		4	12.7	4.76	0.8	5.16
NP-CNGA120412FS4	●	★	★		4	12.7	4.76	1.2	5.16
NP-CNGA120404TA4			★	●	4	12.7	4.76	0.4	5.16
NP-CNGA120408TA4			★	●	4	12.7	4.76	0.8	5.16
NP-CNGA120412TA4			★	●	4	12.7	4.76	1.2	5.16
NP-CNGA120404TS4		★			4	12.7	4.76	0.4	5.16
NP-CNGA120408TS4		★			4	12.7	4.76	0.8	5.16
NP-CNGA120412TS4		★			4	12.7	4.76	1.2	5.16
NP-CNGA120404TH4			★	●	4	12.7	4.76	0.4	5.16
NP-CNGA120408TH4			★	●	4	12.7	4.76	0.8	5.16
NP-CNGA120412TH4			★	●	4	12.7	4.76	1.2	5.16
W NP-CNGA120404FSWS4	★	★	★		4	12.7	4.76	0.4	5.16
W NP-CNGA120408FSWS4	★	★	★		4	12.7	4.76	0.8	5.16
W NP-CNGA120412FSWS4	★	★	★		4	12.7	4.76	1.2	5.16
W NP-CNGA120404GAWS4			●	●	4	12.7	4.76	0.4	5.16
W NP-CNGA120408GAWS4			●	●	4	12.7	4.76	0.8	5.16
W NP-CNGA120412GAWS4			●	●	4	12.7	4.76	1.2	5.16
W NP-CNGA120404GSWS4	●	●			4	12.7	4.76	0.4	5.16
W NP-CNGA120408GSWS4	●	●			4	12.7	4.76	0.8	5.16
W NP-CNGA120412GSWS4	●	●			4	12.7	4.76	1.2	5.16
NP-CNGA120402GA2			★		2	12.7	4.76	0.2	5.16
NP-CNGA120404GA2			●	●	2	12.7	4.76	0.4	5.16
NP-CNGA120408GA2			●	●	2	12.7	4.76	0.8	5.16
NP-CNGA120412GA2			●	●	2	12.7	4.76	1.2	5.16
NP-CNGA120402GS2		★			2	12.7	4.76	0.2	5.16
NP-CNGA120404GS2	●	●			2	12.7	4.76	0.4	5.16
NP-CNGA120408GS2	●	●			2	12.7	4.76	0.8	5.16
NP-CNGA120412GS2	●	●			2	12.7	4.76	1.2	5.16

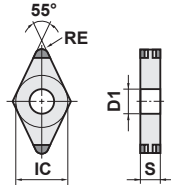
Order Number	BC8105	BC8110	BC8120	BC8130	Cutting Edges	IC	S	RE	D1
NP-CNGA120404GH2		★	★	●	2	12.7	4.76	0.4	5.16
NP-CNGA120408GH2		★	★	●	2	12.7	4.76	0.8	5.16
NP-CNGA120412GH2		★	★	●	2	12.7	4.76	1.2	5.16
NP-CNGA120402FS2		★			2	12.7	4.76	0.2	5.16
NP-CNGA120404FS2		●	●		2	12.7	4.76	0.4	5.16
NP-CNGA120408FS2	●	●	●		2	12.7	4.76	0.8	5.16
NP-CNGA120412FS2	●	●	●		2	12.7	4.76	1.2	5.16
NP-CNGA120404TA2			●	●	2	12.7	4.76	0.4	5.16
NP-CNGA120408TA2			●	●	2	12.7	4.76	0.8	5.16
NP-CNGA120412TA2			●	●	2	12.7	4.76	1.2	5.16
NP-CNGA120404TS2		●			2	12.7	4.76	0.4	5.16
NP-CNGA120408TS2		●			2	12.7	4.76	0.8	5.16
NP-CNGA120412TS2		●			2	12.7	4.76	1.2	5.16
NP-CNGA120404TH2			★	●	2	12.7	4.76	0.4	5.16
NP-CNGA120408TH2			★	●	2	12.7	4.76	0.8	5.16
NP-CNGA120412TH2			★	●	2	12.7	4.76	1.2	5.16
NEW W NP-CNGA120404FBWL2	★	★	★		2	12.7	4.76	0.4	5.16
NEW W NP-CNGA120408FBWL2	★	★	★		2	12.7	4.76	0.8	5.16
NEW W NP-CNGA120412FBWL2	★	★	★		2	12.7	4.76	1.2	5.16
NEW W NP-CNGA120404GBWL2	★	★	★		2	12.7	4.76	0.4	5.16
NEW W NP-CNGA120408GBWL2	★	★	★		2	12.7	4.76	0.8	5.16
NEW W NP-CNGA120412GBWL2	★	★	★		2	12.7	4.76	1.2	5.16
W NP-CNGA120404FSWS2	★	★	★		2	12.7	4.76	0.4	5.16
W NP-CNGA120408FSWS2	★	★	★		2	12.7	4.76	0.8	5.16
W NP-CNGA120412FSWS2	★	★	★		2	12.7	4.76	1.2	5.16
W NP-CNGA120404GAWS2			●	●	2	12.7	4.76	0.4	5.16
W NP-CNGA120408GAWS2			●	●	2	12.7	4.76	0.8	5.16
W NP-CNGA120412GAWS2			●	●	2	12.7	4.76	1.2	5.16
W NP-CNGA120404GSWS2	●	★			2	12.7	4.76	0.4	5.16
W NP-CNGA120408GSWS2	●	★			2	12.7	4.76	0.8	5.16
W NP-CNGA120412GSWS2	●	★			2	12.7	4.76	1.2	5.16
B BM-CNGM120404TA2			●		2	12.7	4.76	0.4	5.16
B BM-CNGM120408TA2			●		2	12.7	4.76	0.8	5.16
B BM-CNGM120412TA2			●		2	12.7	4.76	1.2	5.16
B BF-CNGM120404TS2		●			2	12.7	4.76	0.4	5.16
B BF-CNGM120408TS2		●			2	12.7	4.76	0.8	5.16
B BF-CNGM120412TS2		●			2	12.7	4.76	1.2	5.16

B: Breaker W: Wiper

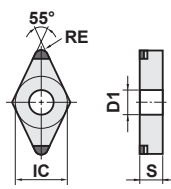
DNGA, DNGM

NEGATIVE INSERTS (WITH HOLE)

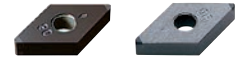
4 corner



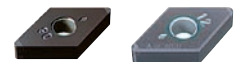
2 corner



NEW PETIT CUT NEW PETIT CUT
NP_004 NP_002



NEW PETIT CUT NEW PETIT CUT
NP_GAWS2J BF, BM



[With Wiper]

[With Breaker]

Order Number	BC8105	BC8110	BC8120	BC8130	Cutting Edges	IC	S	RE	D1
NP-DNGA150404GA4			★	★	4	12.7	4.76	0.4	5.16
NP-DNGA150408GA4			★	★	4	12.7	4.76	0.8	5.16
NP-DNGA150412GA4			★	★	4	12.7	4.76	1.2	5.16
NP-DNGA150604GA4			●	●	4	12.7	6.35	0.4	5.16
NP-DNGA150608GA4			●	●	4	12.7	6.35	0.8	5.16
NP-DNGA150612GA4			●	●	4	12.7	6.35	1.2	5.16
NP-DNGA150404GS4	★	★			4	12.7	4.76	0.4	5.16
NP-DNGA150408GS4	★	★			4	12.7	4.76	0.8	5.16
NP-DNGA150412GS4	★	★			4	12.7	4.76	1.2	5.16
NP-DNGA150604GS4	●	●			4	12.7	6.35	0.4	5.16
NP-DNGA150608GS4	●	●			4	12.7	6.35	0.8	5.16
NP-DNGA150612GS4	●	●			4	12.7	6.35	1.2	5.16
NP-DNGA150404GH4		★	★	★	4	12.7	4.76	0.4	5.16
NP-DNGA150408GH4		★	★	★	4	12.7	4.76	0.8	5.16
NP-DNGA150412GH4		★	★	★	4	12.7	4.76	1.2	5.16
NP-DNGA150604GH4		★	★	●	4	12.7	6.35	0.4	5.16
NP-DNGA150608GH4		★	★	●	4	12.7	6.35	0.8	5.16
NP-DNGA150612GH4		★	★	●	4	12.7	6.35	1.2	5.16
NP-DNGA150404FS4	★	★	★		4	12.7	4.76	0.4	5.16
NP-DNGA150408FS4	★	★	★		4	12.7	4.76	0.8	5.16
NP-DNGA150412FS4	★	★	★		4	12.7	4.76	1.2	5.16
NP-DNGA150604FS4	●	★			4	12.7	6.35	0.4	5.16
NP-DNGA150608FS4	●	★			4	12.7	6.35	0.8	5.16
NP-DNGA150612FS4	●	★			4	12.7	6.35	1.2	5.16
NP-DNGA150404TA4			★	★	4	12.7	4.76	0.4	5.16
NP-DNGA150408TA4			★	★	4	12.7	4.76	0.8	5.16
NP-DNGA150412TA4			★	★	4	12.7	4.76	1.2	5.16
NP-DNGA150604TA4			★	●	4	12.7	6.35	0.4	5.16
NP-DNGA150608TA4			★	●	4	12.7	6.35	0.8	5.16
NP-DNGA150612TA4			★	●	4	12.7	6.35	1.2	5.16
NP-DNGA150404TS4		★			4	12.7	4.76	0.4	5.16
NP-DNGA150408TS4		★			4	12.7	4.76	0.8	5.16
NP-DNGA150412TS4		★			4	12.7	4.76	1.2	5.16
NP-DNGA150604TS4		★			4	12.7	6.35	0.4	5.16
NP-DNGA150608TS4		★			4	12.7	6.35	0.8	5.16
NP-DNGA150612TS4		★			4	12.7	6.35	1.2	5.16
NP-DNGA150404TH4			★	★	4	12.7	4.76	0.4	5.16
NP-DNGA150408TH4			★	★	4	12.7	4.76	0.8	5.16
NP-DNGA150412TH4			★	★	4	12.7	4.76	1.2	5.16
NP-DNGA150604TH4			★	★	4	12.7	6.35	0.4	5.16
NP-DNGA150608TH4			★	★	4	12.7	6.35	0.8	5.16
NP-DNGA150612TH4			★	★	4	12.7	6.35	1.2	5.16

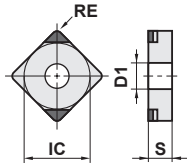
Order Number	BC8105	BC8110	BC8120	BC8130	Cutting Edges IC	S	RE	D1	
NP-DNGA110408GA2			●	●	2	9.53	4.76	0.8	3.81
NP-DNGA150402GA2			★		2	12.7	4.76	0.2	5.16
NP-DNGA150404GA2			★	★	2	12.7	4.76	0.4	5.16
NP-DNGA150408GA2			★	★	2	12.7	4.76	0.8	5.16
NP-DNGA150412GA2			★	★	2	12.7	4.76	1.2	5.16
NP-DNGA150602GA2			★		2	12.7	6.35	0.2	5.16
NP-DNGA150604GA2			★	●	2	12.7	6.35	0.4	5.16
NP-DNGA150608GA2			★	●	2	12.7	6.35	0.8	5.16
NP-DNGA150612GA2			★	●	2	12.7	6.35	1.2	5.16
NP-DNGA150402GS2		★			2	12.7	4.76	0.2	5.16
NP-DNGA150404GS2	★	★			2	12.7	4.76	0.4	5.16
NP-DNGA150408GS2	★	★			2	12.7	4.76	0.8	5.16
NP-DNGA150412GS2	★	★			2	12.7	4.76	1.2	5.16
NP-DNGA150604GS2	●	●			2	12.7	6.35	0.4	5.16
NP-DNGA150608GS2	●	●			2	12.7	6.35	0.8	5.16
NP-DNGA150612GS2	●	●			2	12.7	6.35	1.2	5.16
NP-DNGA150404GH2		★	★	★	2	12.7	4.76	0.4	5.16
NP-DNGA150408GH2		★	★	★	2	12.7	4.76	0.8	5.16
NP-DNGA150412GH2		★	★	★	2	12.7	4.76	1.2	5.16
NP-DNGA150604GH2		★	★	●	2	12.7	6.35	0.4	5.16
NP-DNGA150608GH2		★	★	●	2	12.7	6.35	0.8	5.16
NP-DNGA150612GH2		★	★	●	2	12.7	6.35	1.2	5.16
NP-DNGA150402FS2		★			2	12.7	4.76	0.2	5.16
NP-DNGA150404FS2	●	★	★		2	12.7	4.76	0.4	5.16
NP-DNGA150408FS2	★	★	★		2	12.7	4.76	0.8	5.16
NP-DNGA150412FS2	★	★	★		2	12.7	4.76	1.2	5.16
NP-DNGA150604FS2	★	●	●		2	12.7	6.35	0.4	5.16
NP-DNGA150608FS2	●	●	●		2	12.7	6.35	0.8	5.16
NP-DNGA150612FS2	●	●	●		2	12.7	6.35	1.2	5.16
NP-DNGA150404TA2			★	★	2	12.7	4.76	0.4	5.16
NP-DNGA150408TA2			★	★	2	12.7	4.76	0.8	5.16
NP-DNGA150412TA2			★	★	2	12.7	4.76	1.2	5.16
NP-DNGA150604TA2			●	●	2	12.7	6.35	0.4	5.16
NP-DNGA150608TA2			●	●	2	12.7	6.35	0.8	5.16
NP-DNGA150612TA2			●	●	2	12.7	6.35	1.2	5.16
NP-DNGA150404TS2		★			2	12.7	4.76	0.4	5.16
NP-DNGA150408TS2		★			2	12.7	4.76	0.8	5.16
NP-DNGA150412TS2		★			2	12.7	4.76	1.2	5.16
NP-DNGA150604TS2		●			2	12.7	6.35	0.4	5.16
NP-DNGA150608TS2		●			2	12.7	6.35	0.8	5.16
NP-DNGA150612TS2		●			2	12.7	6.35	1.2	5.16
NP-DNGA150404TH2			★	★	2	12.7	4.76	0.4	5.16
NP-DNGA150408TH2			★	★	2	12.7	4.76	0.8	5.16
NP-DNGA150412TH2			★	★	2	12.7	4.76	1.2	5.16
NP-DNGA150604TH2			★	★	2	12.7	6.35	0.4	5.16
NP-DNGA150608TH2			★	★	2	12.7	6.35	0.8	5.16
NP-DNGA150612TH2			★	★	2	12.7	6.35	1.2	5.16
W NP-DNGA150404GAWS2JR			★		2	12.7	4.76	0.4	5.16
W NP-DNGA150404GAWS2JL			★		2	12.7	4.76	0.4	5.16
W NP-DNGA150408GAWS2JR			★		2	12.7	4.76	0.8	5.16
W NP-DNGA150408GAWS2JL			★		2	12.7	4.76	0.8	5.16
W NP-DNGA150604GAWS2JR			●		2	12.7	6.35	0.4	5.16
W NP-DNGA150604GAWS2JL			●		2	12.7	6.35	0.4	5.16
W NP-DNGA150608GAWS2JR			●		2	12.7	6.35	0.8	5.16
W NP-DNGA150608GAWS2JL			●		2	12.7	6.35	0.8	5.16
B BF-DNGM150404TS2		●			2	12.7	4.76	0.4	5.16
B BF-DNGM150408TS2		●			2	12.7	4.76	0.8	5.16
B BF-DNGM150412TS2		●			2	12.7	4.76	1.2	5.16
B BM-DNGM150404TA2			★		2	12.7	4.76	0.4	5.16
B BM-DNGM150408TA2			★		2	12.7	4.76	0.8	5.16
B BM-DNGM150412TA2			★		2	12.7	4.76	1.2	5.16
B BM-DNGM150604TA2			●		2	12.7	6.35	0.4	5.16
B BM-DNGM150608TA2			●		2	12.7	6.35	0.8	5.16
B BM-DNGM150612TA2			●		2	12.7	6.35	1.2	5.16

B: Breaker W: Wiper

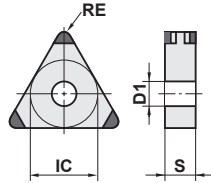
SNGA, TNGA, TNGM

NEGATIVE INSERTS (WITH HOLE)

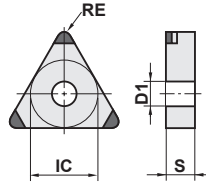
2 corner



6 corner



3 corner



NEW PETIT CUT

NP_002



NEW PETIT CUT NEW PETIT CUT NEW PETIT CUT

NP_006

NP_003

BM_003



[With Breaker]

Order Number	BC8105	BC8110	BC8120	BC8130	Cutting Edges	IC	S	RE	D1
NP-SNGA120408GA2			★	★	2	12.7	4.76	0.8	5.16
NP-SNGA120412GA2			★	★	2	12.7	4.76	1.2	5.16
NP-TNGA160404GA6			●	●	6	9.53	4.76	0.4	3.81
NP-TNGA160408GA6			●	●	6	9.53	4.76	0.8	3.81
NP-TNGA160412GA6			●	●	6	9.53	4.76	1.2	3.81
NP-TNGA160404GS6	●	●			6	9.53	4.76	0.4	3.81
NP-TNGA160408GS6	●	●			6	9.53	4.76	0.8	3.81
NP-TNGA160412GS6	●	●			6	9.53	4.76	1.2	3.81
NP-TNGA160404GH6		★	★	★	6	9.53	4.76	0.4	3.81
NP-TNGA160408GH6		★	★	★	6	9.53	4.76	0.8	3.81
NP-TNGA160412GH6		★	★	★	6	9.53	4.76	1.2	3.81
NP-TNGA160404FS6	●	★	★		6	9.53	4.76	0.4	3.81
NP-TNGA160408FS6	●	★	★		6	9.53	4.76	0.8	3.81
NP-TNGA160412FS6	●	★	★		6	9.53	4.76	1.2	3.81
NP-TNGA160404TA6			★	●	6	9.53	4.76	0.4	3.81
NP-TNGA160408TA6			★	●	6	9.53	4.76	0.8	3.81
NP-TNGA160412TA6			★	●	6	9.53	4.76	1.2	3.81
NP-TNGA160404TS6		★			6	9.53	4.76	0.4	3.81
NP-TNGA160408TS6		★			6	9.53	4.76	0.8	3.81
NP-TNGA160412TS6		★			6	9.53	4.76	1.2	3.81
NP-TNGA160404TH6			★	★	6	9.53	4.76	0.4	3.81
NP-TNGA160408TH6			★	★	6	9.53	4.76	0.8	3.81
NP-TNGA160412TH6			★	★	6	9.53	4.76	1.2	3.81
NP-TNGA160402GA3			★		3	9.53	4.76	0.2	3.81
NP-TNGA160404GA3			★	●	3	9.53	4.76	0.4	3.81
NP-TNGA160408GA3			★	●	3	9.53	4.76	0.8	3.81
NP-TNGA160412GA3			★	●	3	9.53	4.76	1.2	3.81
NP-TNGA160402GS3		★			3	9.53	4.76	0.2	3.81
NP-TNGA160404GS3	●	★			3	9.53	4.76	0.4	3.81
NP-TNGA160408GS3	●	★			3	9.53	4.76	0.8	3.81
NP-TNGA160412GS3	●	★			3	9.53	4.76	1.2	3.81
NP-TNGA160404GH3		★	★	●	3	9.53	4.76	0.4	3.81
NP-TNGA160408GH3		★	★	●	3	9.53	4.76	0.8	3.81
NP-TNGA160412GH3		★	★	●	3	9.53	4.76	1.2	3.81
NP-TNGA160402FS3		★			3	9.53	4.76	0.2	3.81
NP-TNGA160404FS3	●	★	●		3	9.53	4.76	0.4	3.81
NP-TNGA160408FS3	●	●	●		3	9.53	4.76	0.8	3.81
NP-TNGA160412FS3	●	●	●		3	9.53	4.76	1.2	3.81

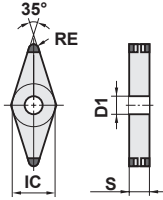
Order Number	BC8105	BC8110	BC8120	BC8130	Cutting Edges	IC	S	RE	D1
NP-TNGA160404TA3			●	●	3	9.53	4.76	0.4	3.81
NP-TNGA160408TA3			●	●	3	9.53	4.76	0.8	3.81
NP-TNGA160412TA3			●	●	3	9.53	4.76	1.2	3.81
NP-TNGA160404TS3		●			3	9.53	4.76	0.4	3.81
NP-TNGA160408TS3		●			3	9.53	4.76	0.8	3.81
NP-TNGA160412TS3		●			3	9.53	4.76	1.2	3.81
NP-TNGA160404TH3			★	★	3	9.53	4.76	0.4	3.81
NP-TNGA160408TH3			★	★	3	9.53	4.76	0.8	3.81
NP-TNGA160412TH3			★	★	3	9.53	4.76	1.2	3.81
B BM-TNGM160408TA3			●		3	9.53	4.76	0.8	3.81
B BM-TNGM160412TA3			●		3	9.53	4.76	1.2	3.81

B: Breaker W: Wiper

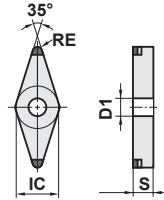
VNGA

NEGATIVE INSERTS (WITH HOLE)

4 corner



2 corner



NEW PETIT CUT

NP_004



NEW PETIT CUT

NP_002



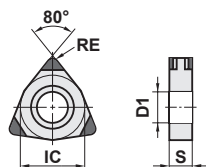
Order Number	BC8105	BC8110	BC8120	BC8130	Cutting Edges	IC	S	RE	D1
NP-VNGA160404GA4			●	●	4	9.53	4.76	0.4	3.81
NP-VNGA160408GA4			●	●	4	9.53	4.76	0.8	3.81
NP-VNGA160412GA4			●	●	4	9.53	4.76	1.2	3.81
NP-VNGA160404GS4	●	★			4	9.53	4.76	0.4	3.81
NP-VNGA160408GS4	●	★			4	9.53	4.76	0.8	3.81
NP-VNGA160412GS4		★			4	9.53	4.76	1.2	3.81
NP-VNGA160404GH4		★	★	★	4	9.53	4.76	0.4	3.81
NP-VNGA160408GH4		★	★	★	4	9.53	4.76	0.8	3.81
NP-VNGA160412GH4		★	★	★	4	9.53	4.76	1.2	3.81
NP-VNGA160404FS4	●	★	★		4	9.53	4.76	0.4	3.81
NP-VNGA160408FS4	●	★	★		4	9.53	4.76	0.8	3.81
NP-VNGA160412FS4			★		4	9.53	4.76	1.2	3.81
NP-VNGA160404TA4			★	●	4	9.53	4.76	0.4	3.81
NP-VNGA160408TA4			★	●	4	9.53	4.76	0.8	3.81
NP-VNGA160412TA4			★	●	4	9.53	4.76	1.2	3.81
NP-VNGA160404TS4		★			4	9.53	4.76	0.4	3.81
NP-VNGA160408TS4		★			4	9.53	4.76	0.8	3.81
NP-VNGA160404TH4			★	★	4	9.53	4.76	0.4	3.81
NP-VNGA160408TH4			★	★	4	9.53	4.76	0.8	3.81
NP-VNGA160412TH4			★	★	4	9.53	4.76	1.2	3.81
NP-VNGA160402GA2			★		2	9.53	4.76	0.2	3.81
NP-VNGA160404GA2			★	●	2	9.53	4.76	0.4	3.81
NP-VNGA160408GA2			★	●	2	9.53	4.76	0.8	3.81
NP-VNGA160412GA2			★	★	2	9.53	4.76	1.2	3.81
NP-VNGA160402GS2		★			2	9.53	4.76	0.2	3.81
NP-VNGA160404GS2	●	●			2	9.53	4.76	0.4	3.81
NP-VNGA160408GS2	●	●			2	9.53	4.76	0.8	3.81
NP-VNGA160412GS2		★			2	9.53	4.76	1.2	3.81
NP-VNGA160404GH2		★	★	★	2	9.53	4.76	0.4	3.81
NP-VNGA160408GH2		★	★	★	2	9.53	4.76	0.8	3.81
NP-VNGA160412GH2		★	★	★	2	9.53	4.76	1.2	3.81
NP-VNGA160402FS2		★			2	9.53	4.76	0.2	3.81
NP-VNGA160404FS2	●	★	●		2	9.53	4.76	0.4	3.81
NP-VNGA160408FS2	●	★	●		2	9.53	4.76	0.8	3.81
NP-VNGA160412FS2			★		2	9.53	4.76	1.2	3.81
NP-VNGA160404TA2			●	●	2	9.53	4.76	0.4	3.81
NP-VNGA160408TA2			●	●	2	9.53	4.76	0.8	3.81
NP-VNGA160412TA2			★	★	2	9.53	4.76	1.2	3.81
NP-VNGA160404TS2		★			2	9.53	4.76	0.4	3.81
NP-VNGA160408TS2		★			2	9.53	4.76	0.8	3.81
NP-VNGA160404TH2			★	★	2	9.53	4.76	0.4	3.81
NP-VNGA160408TH2			★	★	2	9.53	4.76	0.8	3.81
NP-VNGA160412TH2			★	★	2	9.53	4.76	1.2	3.81

B: Breaker W: Wiper

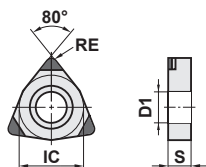
WNGA

NEGATIVE INSERTS (WITH HOLE)

6 corner



3 corner



NEW PETIT CUT NEW PETIT CUT

NP_006

NP_003



NEW PETIT CUT

NP_GSW53



(With Wiper)

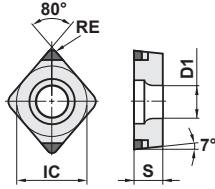
Order Number	BC8105	BC8110	BC8120	BC8130	Cutting Edges	IC	S	RE	D1
NP-WNGA080408GS6	★	●			6	12.7	4.76	0.8	5.16
NP-WNGA080408FS6	★	★			6	12.7	4.76	0.8	5.16
NP-WNGA080408TS6		★			6	12.7	4.76	0.8	5.16
NP-WNGA080408GA3			★	★	3	12.7	4.76	0.8	5.16
NP-WNGA080408GS3	★	★			3	12.7	4.76	0.8	5.16
NP-WNGA080408GH3		★	★	★	2	12.7	4.76	0.8	5.16
NP-WNGA080408FS3	●	★	★		3	12.7	4.76	0.8	5.16
NP-WNGA080408TA3			★	★	3	12.7	4.76	0.8	5.16
NP-WNGA080408TS3		★			3	12.7	4.76	0.8	5.16
NP-WNGA080408TH3			★	★	3	12.7	4.76	0.8	5.16
W NP-WNGA080408GSWS3		●			3	12.7	4.76	0.8	5.16

B: Breaker W: Wiper

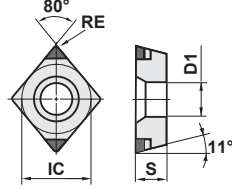
CCGW 7°, CCGT 7°, CPGB 11°

POSITIVE INSERTS (WITH HOLE)

2 corner



2 corner



NEW PETIT CUT NEW PETIT CUT NEW PETIT CUT NEW PETIT CUT

NP_002

NP_00WS2

BF, BM

NP



(With Wiper)

(With Breaker)

(Non-ISO)

NEW PETIT CUT

NP_002 NP_00FBWL2
NP_00GBWL2



(With Wiper)

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

Order Number	BC8105	BC8110	BC8120	BC8130	Cutting Edges	IC	S	RE	D1
NP-CCGW060202GA2			●		2	6.35	2.38	0.2	2.8
NP-CCGW060204GA2			●	●	2	6.35	2.38	0.4	2.8
NP-CCGW060208GA2			●	●	2	6.35	2.38	0.8	2.8
NP-CCGW09T302GA2			●		2	9.53	3.97	0.2	4.4
NP-CCGW09T304GA2			●	●	2	9.53	3.97	0.4	4.4
NP-CCGW09T308GA2			●	●	2	9.53	3.97	0.8	4.4
NP-CCGW060202GS2	●	★			2	6.35	2.38	0.2	2.8
NP-CCGW060204GS2	★	●			2	6.35	2.38	0.4	2.8
NP-CCGW060208GS2	●	●			2	6.35	2.38	0.8	2.8
NP-CCGW09T302GS2	●	★			2	9.53	3.97	0.2	4.4
NP-CCGW09T304GS2	★	●			2	9.53	3.97	0.4	4.4
NP-CCGW09T308GS2	●	●			2	9.53	3.97	0.8	4.4
NP-CCGW09T304GH2		★	★	●	2	9.53	3.97	0.4	4.4
NP-CCGW09T308GH2		★	★	●	2	9.53	3.97	0.8	4.4
NP-CCGW060202FS2		●			2	6.35	2.38	0.2	2.8
NP-CCGW060204FS2		●			2	6.35	2.38	0.4	2.8
NP-CCGW060208FS2		★			2	6.35	2.38	0.8	2.8
NP-CCGW09T302FS2	★	★			2	9.53	3.97	0.2	4.4
NP-CCGW09T304FS2	★	●	●		2	9.53	3.97	0.4	4.4
NP-CCGW09T308FS2	●	●	●		2	9.53	3.97	0.8	4.4
NP-CCGW060204TA2				●	2	6.35	2.38	0.4	2.8
NP-CCGW060208TA2				●	2	6.35	2.38	0.8	2.8
NP-CCGW09T304TA2			●	●	2	9.53	3.97	0.4	4.4
NP-CCGW09T308TA2			□	●	2	9.53	3.97	0.8	4.4
NP-CCGW09T304TH2			★	●	2	9.53	3.97	0.4	4.4
NP-CCGW09T308TH2			★	●	2	9.53	3.97	0.8	4.4
NEW W NP-CCGW09T304FBWL2	★	★	★		2	9.525	3.97	0.4	4.4
NEW W NP-CCGW09T308FBWL2	★	★	★		2	9.525	3.97	0.8	4.4
NEW W NP-CCGW09T304GBWL2	★	★	★		2	9.525	3.97	0.4	4.4
NEW W NP-CCGW09T308GBWL2	★	★	★		2	9.525	3.97	0.8	4.4
W NP-CCGW09T304FSWS2	★	★	★		2	9.53	3.97	0.4	4.4
W NP-CCGW09T308FSWS2	★	★	★		2	9.53	3.97	0.8	4.4
W NP-CCGW09T304GAWS2			●	●	2	9.53	3.97	0.4	4.4
W NP-CCGW09T308GAWS2			●	●	2	9.53	3.97	0.8	4.4
W NP-CCGW09T304GSWS2	●	●			2	9.53	3.97	0.4	4.4
W NP-CCGW09T308GSWS2	●	●			2	9.53	3.97	0.8	4.4
B BF-CCGT09T304TS2		●			2	9.53	3.97	0.4	4.4
B BF-CCGT09T308TS2		●			2	9.53	3.97	0.8	4.4
B BM-CCGT09T304TA2			●		2	9.53	3.97	0.4	4.4
B BM-CCGT09T308TA2			●		2	9.53	3.97	0.8	4.4

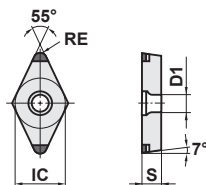
Order Number	BC8105	BC8110	BC8120	BC8130	Cutting Edges	IC	S	RE	D1
NP-CCGW03S102GS	●				1	3.57	1.39	0.2	2.0
NP-CCGW03S104GS	●				1	3.57	1.39	0.4	2.0
NP-CCGW04T002GS	●				1	4.37	1.79	0.2	2.4
NP-CCGW04T004GS	●				1	4.37	1.79	0.4	2.4
NP-CCGW03S102FS		●			1	3.57	1.39	0.2	2.0
NP-CCGW03S104FS		●			1	3.57	1.39	0.4	2.0
NP-CCGW04T002FS		●			1	4.37	1.79	0.2	2.4
NP-CCGW04T004FS		●			1	4.37	1.79	0.4	2.4
NP-CPGB080204GA2			●	●	2	7.94	2.38	0.4	3.5
NP-CPGB080208GA2			●	●	2	7.94	2.38	0.8	3.5
NP-CPGB080212GA2			★	★	2	7.94	2.38	1.2	3.5
NP-CPGB090302GA2			★		2	9.53	3.18	0.2	4.5
NP-CPGB090304GA2			●	●	2	9.53	3.18	0.4	4.5
NP-CPGB090308GA2			●	●	2	9.53	3.18	0.8	4.5
NP-CPGB090312GA2			★	★	2	9.53	3.18	1.2	4.5
NP-CPGB080204GS2	●	★			2	7.94	2.38	0.4	3.5
NP-CPGB080208GS2	●	★			2	7.94	2.38	0.8	3.5
NP-CPGB090302GS2	●	★			2	9.53	3.18	0.2	4.5
NP-CPGB090304GS2	★	★			2	9.53	3.18	0.4	4.5
NP-CPGB090308GS2	●	★			2	9.53	3.18	0.8	4.5
NP-CPGB080204FS2		★			2	7.94	2.38	0.4	3.5
NP-CPGB080208FS2		★			2	7.94	2.38	0.8	3.5
NP-CPGB090302FS2	●	★			2	9.53	3.18	0.2	4.5
NP-CPGB090304FS2	★		★		2	9.53	3.18	0.4	4.5
NP-CPGB090308FS2	●		★		2	9.53	3.18	0.8	4.5
NP-CPGB090312FS2			★		2	9.53	3.18	1.2	4.5
NP-CPGB080204TA2				★	2	7.94	2.38	0.4	3.5
NP-CPGB080208TA2				★	2	7.94	2.38	0.8	3.5
NP-CPGB080212TA2				★	2	7.94	2.38	1.2	3.5
NP-CPGB090304TA2			★	★	2	9.53	3.18	0.4	4.5
NP-CPGB090308TA2			★	★	2	9.53	3.18	0.8	4.5
NP-CPGB090312TA2			★	★	2	9.53	3.18	1.2	4.5

B: Breaker W: Wiper

DCGW 7°, DCGT 7°

POSITIVE INSERTS (WITH HOLE)

2 corner



NEW PETIT CUT

NP_002



NEW PETIT CUT

BM, BF



[With Breaker]

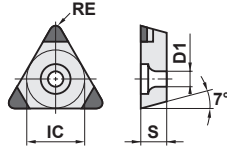
Order Number	BC8105	BC8110	BC8120	BC8130	Cutting Edges	IC	S	RE	D1
NP-DCGW070202GA2			●		2	6.35	2.38	0.2	2.8
NP-DCGW070204GA2			●	●	2	6.35	2.38	0.4	2.8
NP-DCGW070208GA2				●	2	6.35	2.38	0.8	2.8
NP-DCGW11T302GA2			●		2	9.53	3.97	0.2	4.4
NP-DCGW11T304GA2			●	●	2	9.53	3.97	0.4	4.4
NP-DCGW11T308GA2			●	●	2	9.53	3.97	0.8	4.4
NP-DCGW070202GS2	●	●			2	6.35	2.38	0.2	2.8
NP-DCGW070204GS2	●	●			2	6.35	2.38	0.4	2.8
NP-DCGW070208GS2	●	●			2	6.35	2.38	0.8	2.8
NP-DCGW11T302GS2	●	●			2	9.53	3.97	0.2	4.4
NP-DCGW11T304GS2	●	●			2	9.53	3.97	0.4	4.4
NP-DCGW11T308GS2	●	●			2	9.53	3.97	0.8	4.4
NP-DCGW11T304GH2		★	★	●	2	9.53	3.97	0.4	4.4
NP-DCGW11T308GH2		★	★	●	2	9.53	3.97	0.8	4.4
NP-DCGW070202FS2		●			2	6.35	2.38	0.2	2.8
NP-DCGW070204FS2		●	●		2	6.35	2.38	0.4	2.8
NP-DCGW070208FS2		★			2	6.35	2.38	0.8	2.8
NP-DCGW11T302FS2	●	★			2	9.53	3.97	0.2	4.4
NP-DCGW11T304FS2	●	●	●		2	9.53	3.97	0.4	4.4
NP-DCGW11T308FS2	●	●	●		2	9.53	3.97	0.8	4.4
NP-DCGW070204TA2			★	●	2	6.35	2.38	0.4	2.8
NP-DCGW070208TA2				●	2	6.35	2.38	0.8	2.8
NP-DCGW11T304TA2			★	●	2	9.53	3.97	0.4	4.4
NP-DCGW11T308TA2			★	●	2	9.53	3.97	0.8	4.4
NP-DCGW11T304TH2			★	●	2	9.53	3.97	0.4	4.4
NP-DCGW11T308TH2			★	●	2	9.53	3.97	0.8	4.4
B BM-DCGT11T304TA2			●		2	9.53	3.97	0.4	4.4
B BM-DCGT11T308TA2			●		2	9.53	3.97	0.8	4.4
B BF-DCGT11T304TS2		●			2	9.53	3.97	0.4	4.4
B BF-DCGT11T308TS2		●			2	9.53	3.97	0.8	4.4

B: Breaker W: Wiper

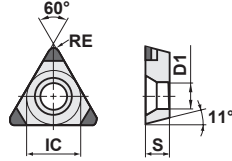
TCGW 7°, TPGB 11°

POSITIVE INSERTS (WITH HOLE)

3 corner



3 corner



NEW PETIT CUT
NP_TCGW



NEW PETIT CUT
NP-TPGB



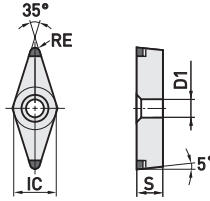
Order Number	BC8105	BC8110	BC8120	BC8130	Cutting Edges	IC	S	RE	D1
NP-TCGW090204GS3		★			3	5.56	2.38	0.4	2.5
NP-TCGW090208GS3		★			3	5.56	2.38	0.8	2.5
NP-TCGW110202GS3		★			3	6.35	2.38	0.2	2.8
NP-TCGW110204GS3		★			3	6.35	2.38	0.4	2.8
NP-TCGW110208GS3		★			3	6.35	2.38	0.8	2.8
NP-TCGW130304GS3		★			3	7.94	3.18	0.4	3.4
NP-TCGW130308GS3		★			3	7.94	3.18	0.8	3.4
NP-TCGW16T304GS3		★			3	9.53	3.97	0.4	4.4
NP-TCGW16T308GS3		★			3	9.53	3.97	0.8	4.4
NP-TPGB080204GA3				●	3	4.76	2.38	0.4	2.4
NP-TPGB080208GA3				●	3	4.76	2.38	0.8	2.4
NP-TPGB090204GA3			★	●	3	5.56	2.38	0.4	2.9
NP-TPGB090208GA3			★	●	3	5.56	2.38	0.8	2.9
NP-TPGB110302GA3			★		3	6.35	3.18	0.2	3.4
NP-TPGB110304GA3			●	●	3	6.35	3.18	0.4	3.4
NP-TPGB110308GA3			●	●	3	6.35	3.18	0.8	3.4
NP-TPGB160304GA3			●	★	3	9.53	3.18	0.4	4.4
NP-TPGB160308GA3			●	★	3	9.53	3.18	0.8	4.4
NP-TPGB080204GS3	●	★			3	4.76	2.38	0.4	2.4
NP-TPGB080208GS3	★	★			3	4.76	2.38	0.8	2.4
NP-TPGB090204GS3	★	★			3	5.56	2.38	0.4	2.9
NP-TPGB090208GS3	★	★			3	5.56	2.38	0.8	2.9
NP-TPGB110302GS3	★	★			3	6.35	3.18	0.2	3.4
NP-TPGB110304GS3	★	★			3	6.35	3.18	0.4	3.4
NP-TPGB110308GS3	★	★			3	6.35	3.18	0.8	3.4
NP-TPGB160304GS3	★	★			3	9.53	3.18	0.4	4.4
NP-TPGB160308GS3	★	★			3	9.53	3.18	0.8	4.4
NP-TPGB160304GH3		★	★	★	3	9.53	3.18	0.4	4.4
NP-TPGB160308GH3		★	★	★	3	9.53	3.18	0.8	4.4
NP-TPGB110302FS3	★	★			3	6.35	3.18	0.2	3.4
NP-TPGB110304FS3	★	★	●		3	6.35	3.18	0.4	3.4
NP-TPGB110308FS3	★	★	●		3	6.35	3.18	0.8	3.4
NP-TPGB160304FS3			●		3	9.53	3.18	0.4	4.4
NP-TPGB160308FS3			●		3	9.53	3.18	0.8	4.4
NP-TPGB080204TA3				★	3	4.76	2.38	0.4	2.4
NP-TPGB080208TA3				★	3	4.76	2.38	0.8	2.4
NP-TPGB090204TA3				★	3	5.56	2.38	0.4	2.9
NP-TPGB090208TA3				★	3	5.56	2.38	0.8	2.9
NP-TPGB110304TA3			★	★	3	6.35	3.18	0.4	3.4
NP-TPGB110308TA3			★	★	3	6.35	3.18	0.8	3.4
NP-TPGB160304TA3			★	●	3	9.53	3.18	0.4	4.4
NP-TPGB160308TA3			★	●	3	9.53	3.18	0.8	4.4
NP-TPGB160304TH3			★	★	2	9.53	3.18	0.4	4.4
NP-TPGB160308TH3			★	★	2	9.53	3.18	0.8	4.4

B: Breaker W: Wiper

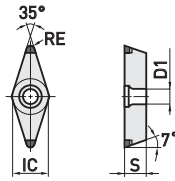
VBGW 5°, VCGW 7°

POSITIVE INSERTS (WITH HOLE)

2 corner



2 corner



NEW PETIT CUT

NP_VBGW



NEW PETIT CUT

NP-VCGW

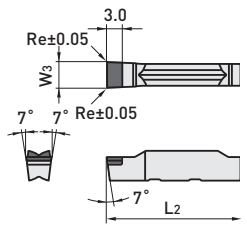


Order Number	BC8105	BC8110	BC8120	BC8130	Cutting Edges	IC	S	RE	D1
NP-VBGW110302GA2			★		2	6.35	3.18	0.2	2.9
NP-VBGW110304GA2			●	●	2	6.35	3.18	0.4	2.9
NP-VBGW110308GA2			★	★	2	6.35	3.18	0.8	2.9
NP-VBGW160402GA2			★		2	9.53	4.76	0.2	4.4
NP-VBGW160404GA2			●	●	2	9.53	4.76	0.4	4.4
NP-VBGW160408GA2			●	●	2	9.53	4.76	0.8	4.4
NP-VBGW110302GS2	★	★			2	6.35	3.18	0.2	2.9
NP-VBGW110304GS2	★	★			2	6.35	3.18	0.4	2.9
NP-VBGW110308GS2	★	★			2	6.35	3.18	0.8	2.9
NP-VBGW160402GS2	★	★			2	9.53	4.76	0.2	4.4
NP-VBGW160404GS2	★	●			2	9.53	4.76	0.4	4.4
NP-VBGW160408GS2	●	●			2	9.53	4.76	0.8	4.4
NP-VBGW160404GH2		★	★	★	2	9.53	4.76	0.4	4.4
NP-VBGW160408GH2		★	★	★	2	9.53	4.76	0.8	4.4
NP-VBGW110302FS2		★			2	6.35	3.18	0.2	2.9
NP-VBGW110304FS2		★			2	6.35	3.18	0.4	2.9
NP-VBGW110308FS2		★			2	6.35	3.18	0.8	2.9
NP-VBGW160402FS2		★			2	9.53	4.76	0.2	4.4
NP-VBGW160404FS2			●		2	9.53	4.76	0.4	4.4
NP-VBGW160408FS2			●		2	9.53	4.76	0.8	4.4
NP-VBGW110304TA2				★	2	6.35	3.18	0.4	2.9
NP-VBGW110308TA2				★	2	6.35	3.18	0.8	2.9
NP-VBGW160404TA2			★	★	2	9.53	4.76	0.4	4.4
NP-VBGW160408TA2			★	★	2	9.53	4.76	0.8	4.4
NP-VBGW160404TH2			★	★	2	9.53	4.76	0.4	4.4
NP-VBGW160408TH2			★	★	2	9.53	4.76	0.8	4.4
NP-VCGW160404GA2			●	●	2	9.53	4.76	0.4	4.4
NP-VCGW160408GA2			●	●	2	9.53	4.76	0.8	4.4
NP-VCGW160404GS2	●	●			2	9.53	4.76	0.4	4.4
NP-VCGW160408GS2	●	●			2	9.53	4.76	0.8	4.4
NP-VCGW160404GH2		★	★	★	2	9.53	4.76	0.4	4.4
NP-VCGW160408GH2		★	★	★	2	9.53	4.76	0.8	4.4
NP-VCGW160404FS2		●	●		2	9.53	4.76	0.4	4.4
NP-VCGW160408FS2		●	●		2	9.53	4.76	0.8	4.4
NP-VCGW160404TA2			★	★	2	9.53	4.76	0.4	4.4
NP-VCGW160408TA2			★	★	2	9.53	4.76	0.8	4.4
NP-VCGW160404TS2		★			2	9.53	4.76	0.4	4.4
NP-VCGW160408TS2		★			2	9.53	4.76	0.8	4.4
NP-VCGW160404TH2			★	★	2	9.53	4.76	0.4	4.4
NP-VCGW160408TH2			★	★	2	9.53	4.76	0.8	4.4

B: Breaker W: Wiper

GY1G

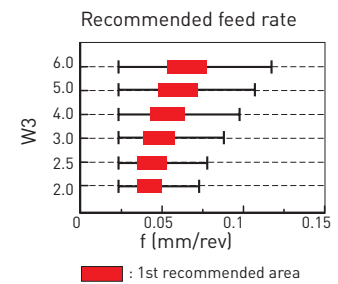
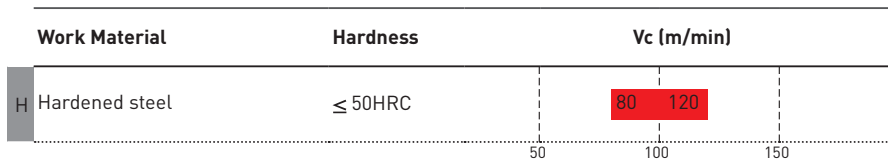
INSERTS FOR GY-GROOVING SYSTEM

Order Number	BC8110	W3	Tolerance	Re	L2	Geometry
GY1G0200D020N-GFGS	●	2.00	±0.03	0.2	20.70	Flat Top (For Hardened material) 
GY1G0239E020N-GFGS	●	2.39	±0.03	0.2	20.70	
GY1G0250E020N-GFGS	●	2.50	±0.03	0.2	20.70	
GY1G0300F020N-GFGS	●	3.00	±0.03	0.2	20.70	
GY1G0318F020N-GFGS	●	3.18	±0.03	0.2	20.70	
GY1G0400G020N-GFGS	●	4.00	±0.03	0.2	25.65	
GY1G0475H020N-GFGS	●	4.75	±0.03	0.2	25.65	
GY1G0500H020N-GFGS	●	5.00	±0.03	0.2	25.65	
GY1G0600J020N-GFGS	●	6.00	±0.03	0.2	25.65	

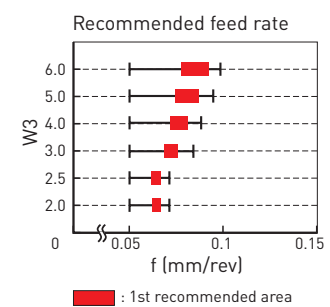
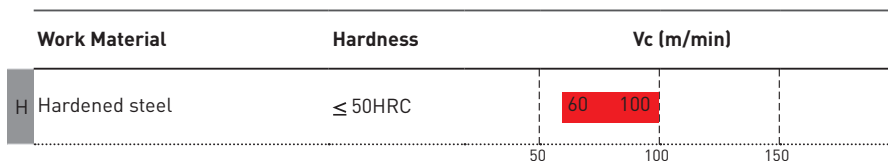
When reaching the min. hole diameter "D1" for internal grooving, please reduce the feed by 20%.

RECOMMENDED CUTTING CONDITIONS

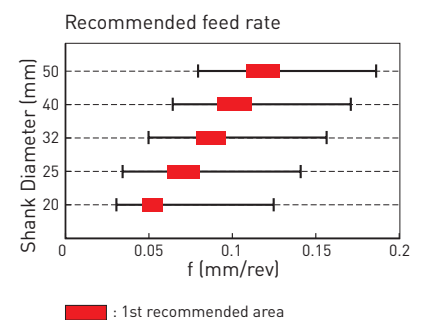
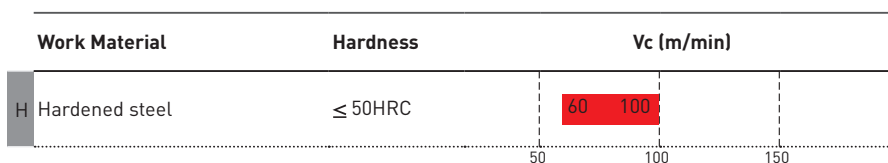
For External Grooving



For Face Grooving



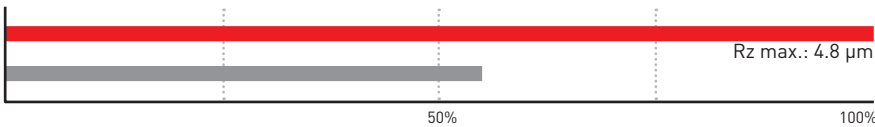
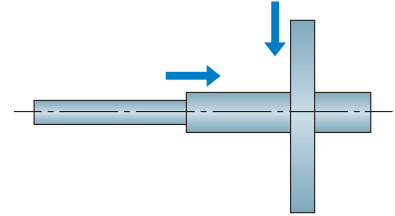
For Internal Grooving



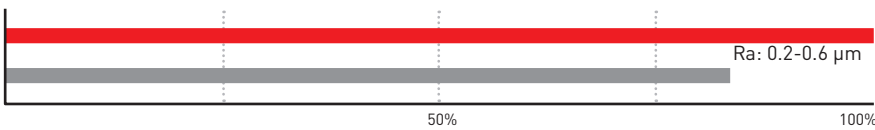
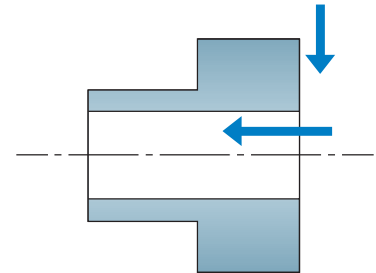
BC8105

APPLICATION EXAMPLES

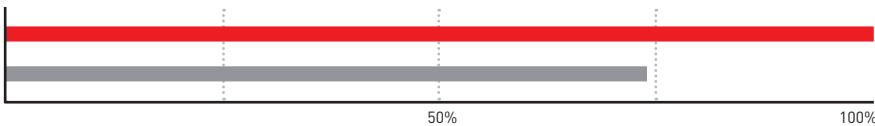
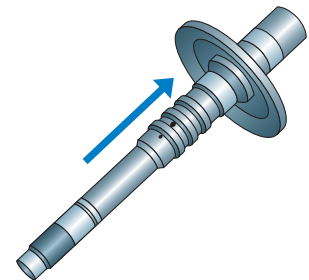
Insert	NP-CNGA120408TSWS2
Workpiece Material	20MnCr55 (58-60 HRC)
Cutting mode	External / Face, Continuous
Cutting Speed Vc (m/min)	160
Feed f (mm/rev)	0.35
Depth of Cut ap (mm)	0.15
Coolant	Dry cutting
Result	Number of work pieces: 154



Insert	NP-DCGW11T308GS2
Workpiece Material	20CrMo2-2 (58-60 HRC)
Cutting mode	External / Face, Continuous
Cutting Speed Vc (m/min)	165
Feed f (mm/rev)	0.085
Depth of Cut ap (mm)	0.1
Coolant	Dry cutting
Result	Number of work pieces: 80



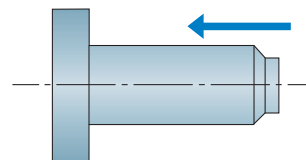
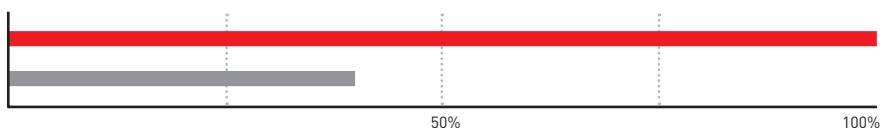
Insert	NP-CNGA120408GSWS2
Workpiece Material	S55CHT (55-65 HRC)
Cutting mode	External, Continuous
Cutting Speed Vc (m/min)	160
Feed f (mm/rev)	0.35
Depth of Cut ap (mm)	0.15
Coolant	Dry cutting
Result	Number of work pieces: 134



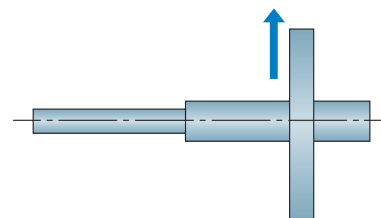
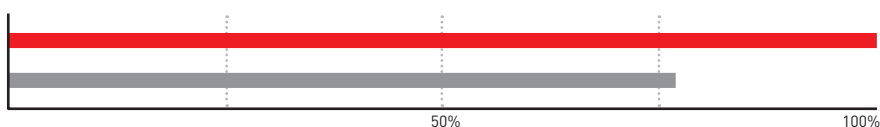
BC8110

APPLICATION EXAMPLES

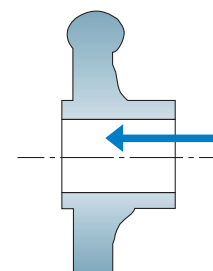
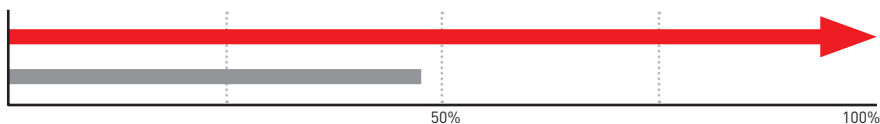
Insert	NP-DNGA150404FS2
Workpiece Material	S55CHT (55-65HRC)
Cutting mode	External, Continuous
Cutting Speed Vc (m/min)	160
Feed f (mm/rev)	0.20
Depth of Cut ap (mm)	0.20
Coolant	Wet cutting
Result	Number of work pieces: 500



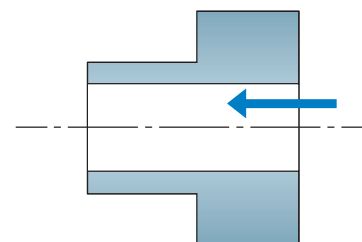
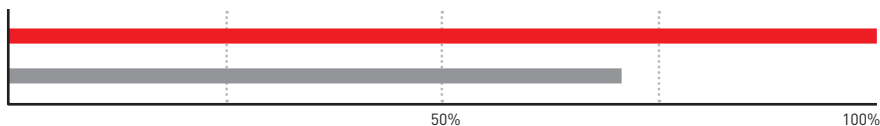
Insert	BF-DNGM150404TS2
Workpiece Material	SCr420H (61-65HRC)
Cutting mode	Face, Continuous
Cutting Speed Vc (m/min)	150
Feed f (mm/rev)	0.12
Depth of Cut ap (mm)	0.15
Coolant	Wet cutting
Result	Number of work pieces: 900



Insert	NP-CCGW09T308GS2
Workpiece Material	Forged steel (60HRC)
Cutting mode	Internal, Continuous
Cutting Speed Vc (m/min)	140
Feed f (mm/rev)	0.03
Depth of Cut ap (mm)	0.15
Coolant	Dry cutting
Result	Number of work pieces: 500



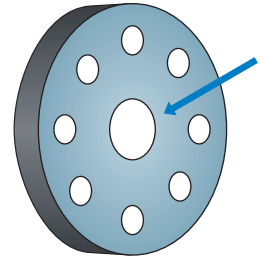
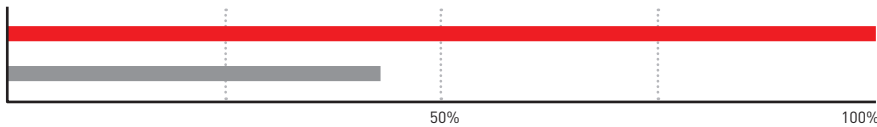
Insert	NP-CCGW09T308GS2
Workpiece Material	16MnCr5 (60-65HRC)
Cutting mode	Internal, Continuous
Cutting Speed Vc (m/min)	110
Feed f (mm/rev)	0.15
Depth of Cut (mm)	0.20
Coolant	Dry cutting
Result	Number of work pieces: 3500



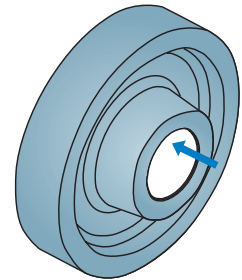
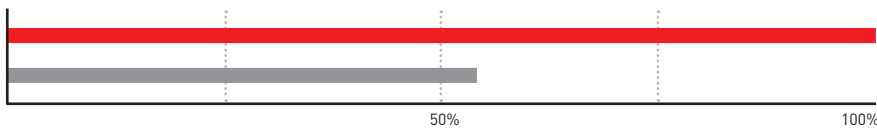
BC8120

APPLICATION EXAMPLES

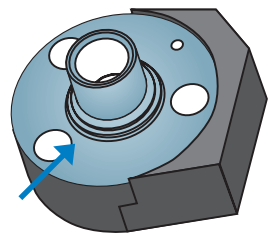
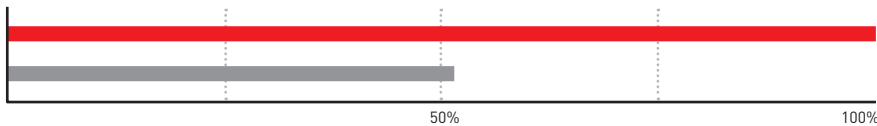
Insert	NP-CNGA120408TA2
Workpiece Material	SUJ (50HRC)
Cutting mode	Face, Interrupted
Cutting Speed Vc (m/min)	130
Feed f (mm/rev)	0.08
Depth of Cut ap (mm)	0.50
Coolant	Wet cutting
Result	Number of work pieces: 110



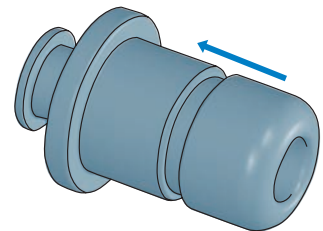
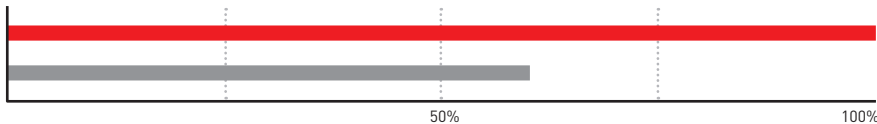
Insert	NP-CNGA120412TA2
Workpiece Material	20MnCr5 (60HRC)
Cutting mode	Internal, Continuous
Cutting Speed Vc (m/min)	180
Feed f (mm/rev)	0.22
Depth of Cut ap (mm)	0.05-0.10
Coolant	Wet cutting
Result	Number of work pieces: 290



Insert	NP-CNGA120408GA2
Workpiece Material	CAC403 (55-58HRC)
Cutting mode	Face, Interrupted
Cutting Speed Vc (m/min)	150
Feed f (mm/rev)	0.15
Depth of Cut ap (mm)	0.10
Coolant	Dry cutting
Result	Number of work pieces: 150



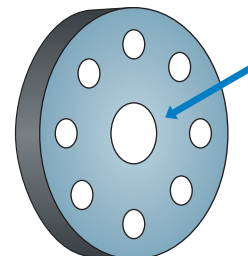
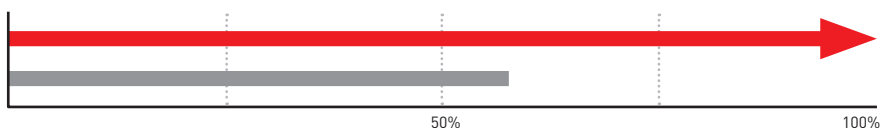
Insert	BM-DNGM150608TA2
Workpiece Material	42CrMoS4 (56-59HRC)
Cutting mode	External, Continuous
Cutting Speed Vc (m/min)	170
Feed f (mm/rev)	0.15
Depth of Cut ap (mm)	0.07-0.10
Coolant	Dry cutting
Result	Number of work pieces: 2500



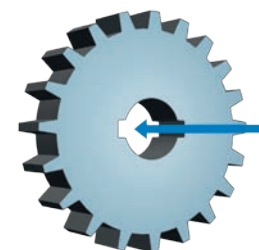
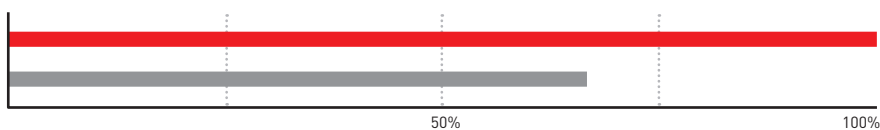
BC8130

APPLICATION EXAMPLES

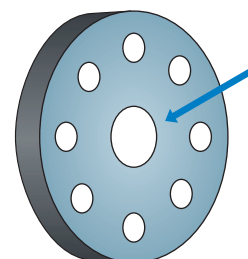
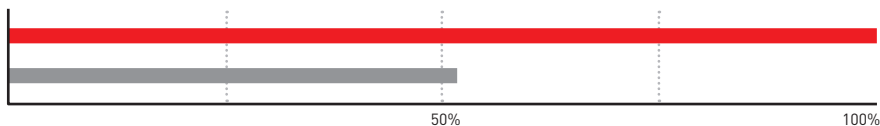
Insert	NP-CNGA120408TH2
Workpiece Material	S45C (58 HRC)
Cutting mode	Face, Interrupted
Cutting Speed Vc (m/min)	130
Feed f (mm/rev)	0.08
Depth of Cut ap (mm)	0.15
Coolant	Wet cutting
Result	Number of work pieces: 70 (no fracture)



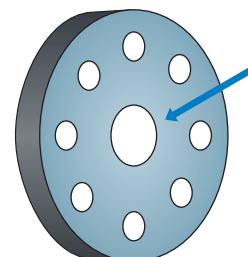
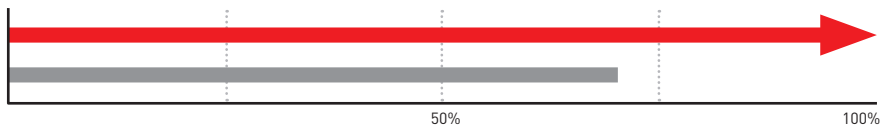
Insert	NP-CCGW09T308TN2
Workpiece Material	16MnCr55 (58-60 HRC)
Cutting mode	Internal, Interrupted
Cutting Speed Vc (m/min)	159-175
Feed f (mm/rev)	0.11
Depth of Cut ap (mm)	0.12
Coolant	Dry cutting
Result	Number of work pieces: 170



Insert	NP-DNGA150408TA2
Workpiece Material	5120H (60 HRC)
Cutting mode	Face, Interrupted
Cutting Speed Vc (m/min)	158-188
Feed f (mm/rev)	0.12
Depth of Cut ap (mm)	0.17
Coolant	Dry cutting
Result	Number of work pieces: 98



Insert	NP-CNGA120412TA2
Workpiece Material	16CN4 (58-60 HRC)
Cutting mode	Face, Interrupted
Cutting Speed Vc (m/min)	100
Feed f (mm/rev)	0.08
Depth of Cut ap (mm)	0.15
Coolant	Dry cutting
Result	Number of work pieces: 140 (no fracture)



NOTES

A series of horizontal dashed lines for writing notes.

NOTES

A series of horizontal dashed lines for writing notes.

GERMANY

MMC HARTMETALL GMBH
Comeniusstr. 2 . 40670 Meerbusch
Phone +49 2159 91890 . Fax +49 2159 918966
Email admin@mmchg.de

U.K.

MMC HARDMETAL U.K. LTD.
Mitsubishi House . Galena Close . Tamworth . Staffs. B77 4AS
Phone +44 1827 312312 . Fax +44 1827 312314
Email sales@mitsubishicarbide.co.uk

SPAIN

MITSUBISHI MATERIALS ESPAÑA, S.A.
Calle Emperador 2 . 46136 Museros/Valencia
Phone +34 96 1441711 . Fax +34 96 1443786
Email mme@mmvalencia.com

FRANCE

MMC METAL FRANCE S.A.R.L.
6, Rue Jacques Monod . 91400 Orsay
Phone +33 1 69 35 53 53 . Fax +33 1 69 35 53 50
Email mmfsales@mmc-metal-france.fr

POLAND

MMC HARDMETAL POLAND SP. Z O.O
Al. Armii Krajowej 61 . 50-541 Wrocław
Phone +48 71335 1620 . Fax +48 71335 1621
Email sales@mitsubishicarbide.com.pl

RUSSIA

MMC HARDMETAL RUSSIA OOO LTD.
Electrozavodskaya Str. 24 . build. 3 107023 Moscow
Phone +7 495 7255885 . Fax +7 495 9813979
Email info@mmc-carbide.ru

ITALY

MMC ITALIA S.R.L.
Via Montefeltro 6/A . 20156 Milano
Phone +39 0293 77031 . Fax +39 0293 589093
Email info@mmc-italia.it

TURKEY

MMC HARTMETALL GMBH ALMANYA - İZMİR MERKEZ ŞUBESİ
Adalet Mahallesi Anadolu Caddesi No: 41-1 . 15001 35580 Bayraklı / İzmir
Phone +90 232 5015000 . Fax +90 232 5015007
Email info@mmchg.com.tr



DISTRIBUTED BY:

┌

┐

└

┘