

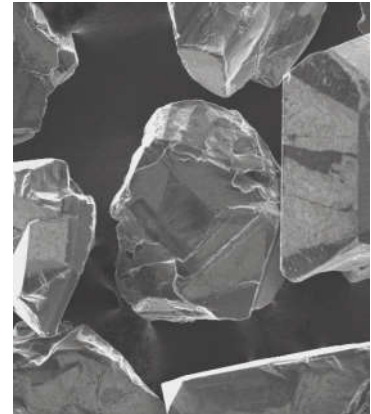


# Coated PCBN Insert For Hardened Steel

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# PCBN Material Introduction

Cubic boron nitride is the second hardest material in the world invented successfully in 1957; the microhardness of CBN's single crystal is HV8000-9000 while the hardness of PCBN is HV2500-5000, so it is considerably better abrasive resistance than tungsten carbide and ceramics. With a higher ability of oxidation resistance within 1000°C, CBN will do not have any chemical reaction together with ferrous material in 1200-1300°C. So it is unique for CBN material dry cutting ferrous materials. The principal application areas for CBN cutting tools are hardened steels, cast irons and sintered irons as well as powder metallurgy components.



## Characteristic

### Benefits and Features;

1. Excellent surface finish
2. High speed turning, high performance
3. More flexibility in machining
4. Less investment in machines
5. Not required coolant
6. Easier in recycling and treatment of chips
7. Easier in removal of outlet of chips

### PCBN tools instruction;

1. Required larger dimension of holders
2. Required shorter extended length of cutting tools
3. Required high-duty of fixtures
4. Required larger clamping area of workpiece
5. No need use coolant in interrupted cutting
6. Properly applied coolant in turning hardened steel
7. Keep the consistency of cutting fluid flow in machining
8. Controlled the thermal stability of work piece

### Material Group (ISO513 Standard)

<b>P</b>	P: Steel	<b>H</b>	H: Hardened Materials
<b>M</b>	M: Stainless Steel	<b>N</b>	N: Non-Ferrous Materials
<b>K</b>	K: Cast Iron	<b>S</b>	S: High-Temp Alloys

# INDEX

Coated PCBN Insert .....	03
Coated PCBN Insert with chip-breaker/ Wiper .....	04
Processing Case of Coated PCBN Insert .....	05
PCBN Insert Identification Code .....	06
Rule of PCBN Insert Code .....	07
Specifications of Coated PCBN Insert with chip-breaker(CBC1) .....	09
Specifications of Coated PCBN Insert with chip-breaker(CBRB) .....	18
Specifications of Coated PCBN Wiper Insert .....	27
Specifications of Coated PCBN Insert .....	30
Technical Data .....	33



# Coated PCBN Insert

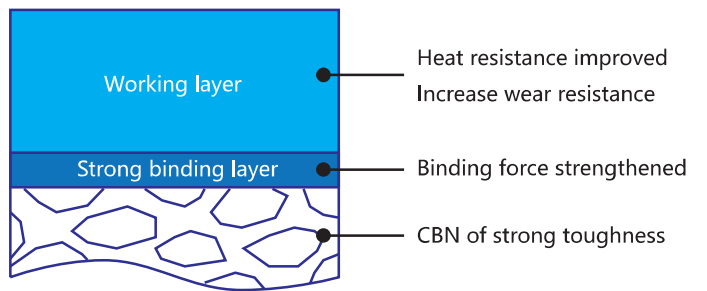


## Film features

**C<sub>2</sub>**

The film is applicable for continuous, light and heavily interrupted processing of hardened steel with excellent universal performance.

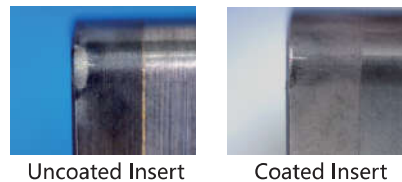
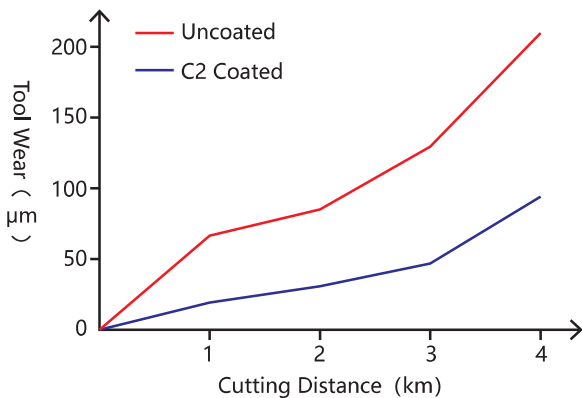
## CBN Basic material and film structure



## Recommended Cutting conditions

Workpiece Material	Cutting Data Recommendations				
	PCBN Grades	Cutting Speed (m/min)	Cutting Depth (mm)	Feed Rate (mm/r)	Characteristics
H	PNH0120	180(150-250)	0.1(0.05-0.3)	0.03-0.2	Continue Cutting
	PNH1020	150(80-230)	0.1(0.05-0.5)	0.05-0.25	Light Interrupt
	PNH2018	100(50-150)	0.1(0.05-0.5)	0.05-0.3	Interrupt
	PNH3019	100(50-150)	0.1(0.05-0.5)	0.05-0.3	Heavy Interrupt

## Cutting performance



Material: GCr15 HRC58-62°  
 Tool: CNGA120408-2N SLST22C2 S0102510  
 Cutting Data: Vc=150m/min f=0.1mm/rev ap=0.15mm

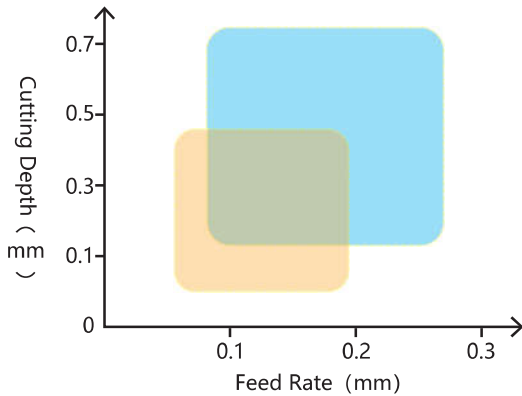
# Coated PCBN Insert with Chip-breaker/ Wiper

## ■ Chip-breaker PCBN Insert

### CBRB/CBC1

Two types of chip breaker, Suitable for hardened steel processing, cutting depth : 0.1~1mm. Excellent chip breaking performance can be achieved.

## ■ Application



CBC1



CBRB

## ■ Cutting performance

### CBC1



Material: Hardened Steel HRC60-65°  
 Tool: CNGM120408-2N SLCBC122C2  
 Cutting Data:  $V_c=150\text{m/min}$   $f=0.12\text{mm/rev}$   $a_p=0.15\text{mm}$

### CBRB



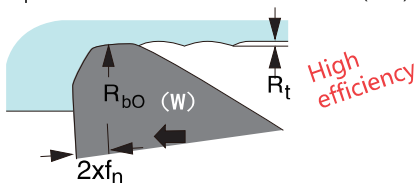
Material: 20CrMoTi HRC58°  
 Tool: DNGM150408-2N SLCBRB30C2  
 Cutting Data:  $V_c=160\text{m/min}$   $f=0.15\text{mm/rev}$   $a_p=0.4\text{mm}$

## ■ Wiper PCBN inserts

Wiper PCBN inserts could improve high quality surface and high efficiency compare with standard nose radius.

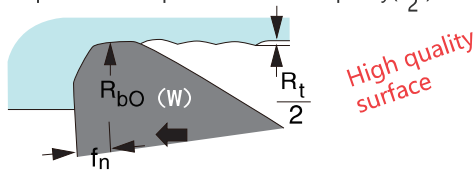
With the same  $R_t$ ,

Wiper inserts increase double feed rate( $2xf_n$ ).

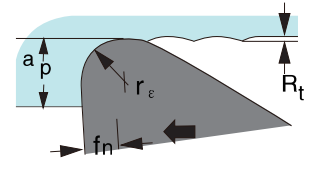


Under the same  $f_n$ ,

Wiper inserts improve the surface quality ( $\frac{R_t}{2}$ ).



Standard nose radius.



- Wiper PCBN inserts must match with right type of holder.
- High cutting resistance of wiper PCBN inserts suitable for high wiper inserts machine and workpiece.

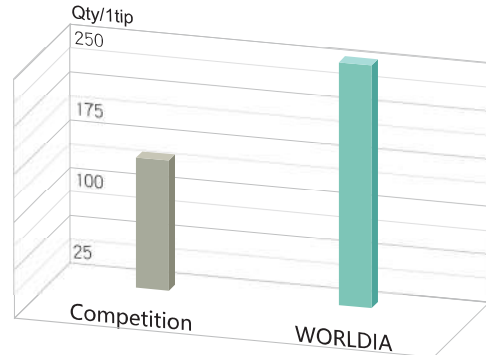
# Processing Case of Coated PCBN Insert

## CV Joints of auto parts

Material: 20CrMoTi  
 Hardness: HRC58-62°  
 Finishing boring and profile machining



PCBN Grade	Competition	WORLDIA PNH2018
Insert type	TNGA 160416-3N	TNGA 160416-3N
Speed(m/min)	200	160
Feed(mm/r)	0.125	0.125
Cutting depth(mm)	0.2	0.2
Qty/1tip	150	240
Comparison of tool life	100%	160%

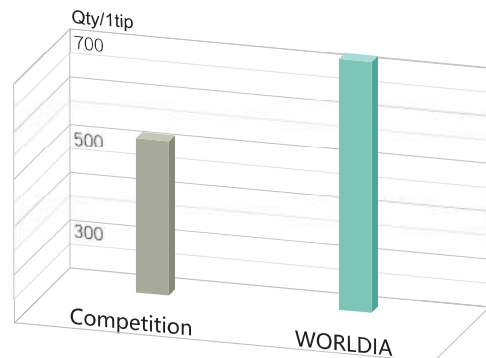


## Motor gear

Material: Hardened Steel  
 Hardness: HRC55°  
 Finishing surface machining



PCBN Grade	Competition	WORLDIA PNH0120
Insert type	TNGA 160408-3N	TNGA 160408-3N
Speed(m/min)	120	120
Feed(mm/r)	0.04	0.04
Cutting depth(mm)	0.08	0.08
Qty/1tip	505	700
Comparison of tool life	100%	139%

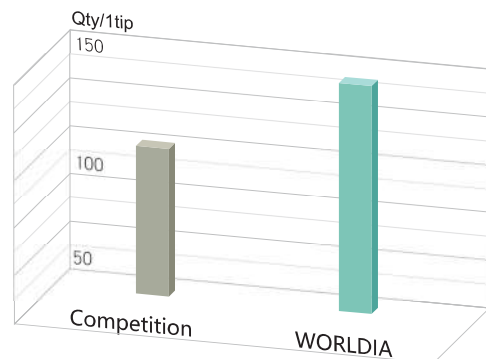


## Hollow shaft

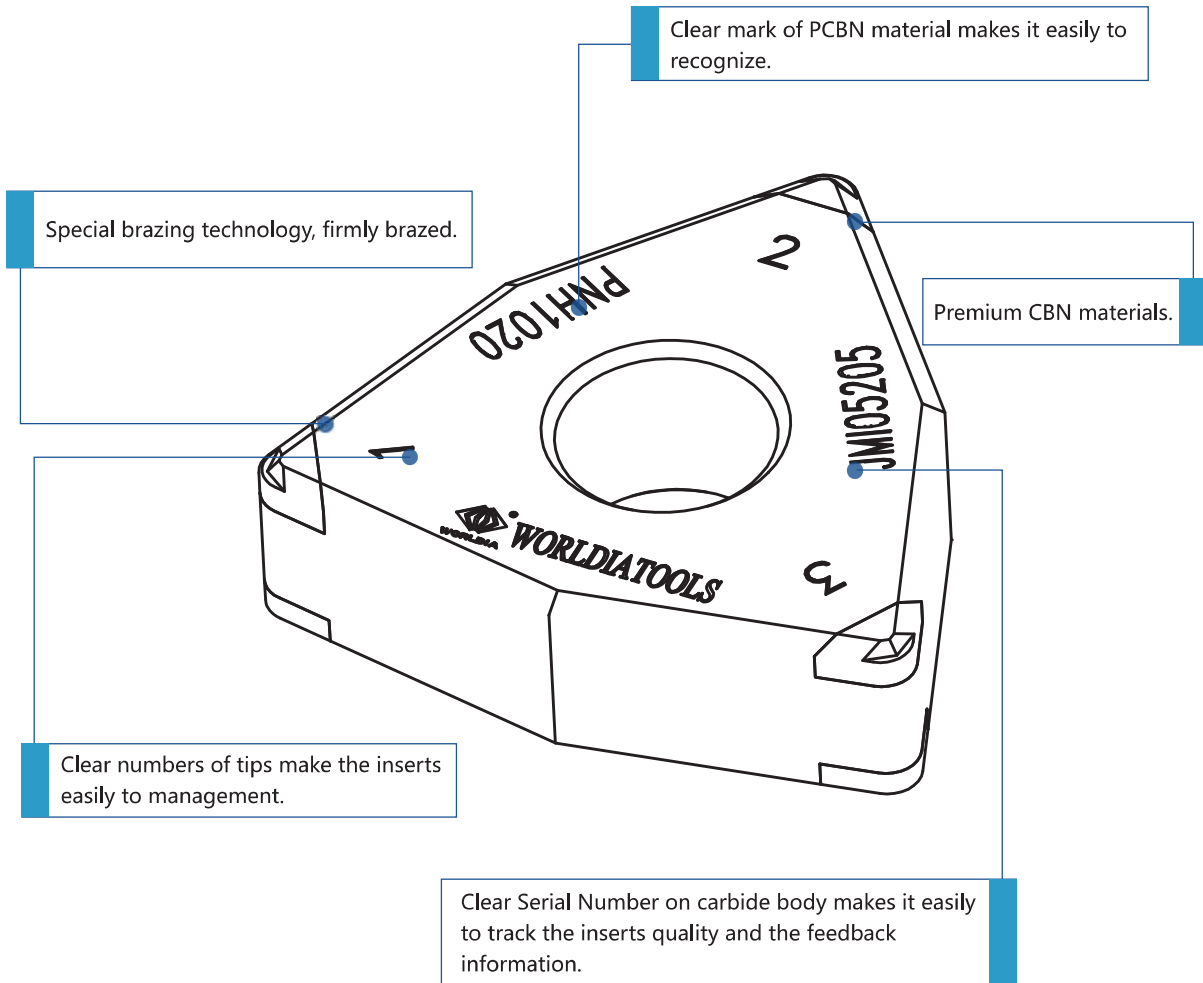
Material: 20CrMnTi  
 Hardness: HRC55°  
 Finishing boring cutter



PCBN Grade	Competition	WORLDIA PNH1020
Insert type	TCGW090204-3N	TCGW090204-3N
Speed(m/min)	150	180
Feed(mm/r)	0.05	0.05
Cutting depth(mm)	0.1	0.1
Qty/1tip	130	200
Comparison of tool life	100%	154%



# PCBN Insert Identification Code



ISO	<b>C</b>	<b>C</b>	<b>M</b>	<b>W</b>	<b>09</b>	<b>T3</b>	<b>04</b>	<b>1</b>	<b>N</b>	<b>S</b>	<b>010</b>	<b>20</b>	<b>05</b>	<b>CB</b>	<b>ST</b>	<b>22</b>	<b>C2</b>	<b>PNH1020</b>
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

ANSI	<b>C</b>	<b>C</b>	<b>M</b>	<b>W</b>	<b>3(2.5)</b>	<b>1</b>	<b>1</b>	<b>N</b>	<b>S</b>	<b>010</b>	<b>20</b>	<b>05</b>	<b>CB</b>	<b>ST</b>	<b>22</b>	<b>C2</b>	<b>PNH1020</b>
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

## Rule of PCBN Insert Code

1 Shape			
	H	120°	
	O	135°	
	P	108°	
	R		
	S	90°	
	T	60°	

2 Clearance Angle			
	A		E
	B		F
	C		G
	D		N
			P
			O

4 Standard, Chipbreaker			
	N		G
	R		W
	F		T
	A		Q
	M		U
		Other	X

3 Tolerance-ISO	Tolerance-ANSI							
	Code	inch(mm)			Code	inch		
		m	s	IC		m	ic	s
	<b>C</b>	±0.013	±0.025	±0.025	<b>C</b>	±.0005	±.001	±.001
	<b>H</b>	±0.013	±0.025	±0.013	<b>H</b>	±.0005	±.0005	±.001
	<b>E</b>	±0.025	±0.025	±0.025	<b>E</b>	±.001	±.001	±.001
	<b>G</b>	±0.025	±0.13	±0.025	<b>G</b>	±.001	±.001	±.005
	<b>K</b>	±0.013	±0.025	±0.05-±0.13	<b>K</b>	±.0005	±.002-.005	±.001
	<b>M</b>	±0.08-±0.18	±0.13	±0.05-±0.13	<b>M</b>	±.002-.005	±.002-.005	±.005
	<b>U</b>	±0.13-±0.38	±0.13	±0.08-±0.25	<b>U</b>	±.005-.012	±.005-.010	±.005

5 Inscribed Circle Dia.									
ISO					ANSI				
C	D	R	S	T	V	W	mm	Code	IC Size
S4	04	03	03	06	-	-	3.97	(1.2)	5/32
04	05	04	04	08	08	S3	4.76	(1.5)	3/16
05	06	05	05	09	09	03	5.56	(1.8)	7/32
-	-	06	-	-	-	-	6	-	-
06	07	06	06	11	11	04	6.35	2	1/4
08	09	07	07	13	13	05	7.94	(2.5)	5/16
-	-	08	-	-	-	-	8	-	-
09	11	09	09	16	16	06	9.525	3	3/8
-	-	10	-	-	-	-	10	-	-
-	-	12	-	-	-	-	12	-	-
12	15	12	12	22	22	08	12.7	4	1/2
16	19	15	15	27	27	10	15.875	5	5/8
-	-	16	-	-	-	-	16	-	-
19	23	19	19	33	33	13	19.05	6	3/4
-	-	20	-	-	-	-	20	-	-
22	27	22	22	38	38	15	22.225	7	7/8
-	-	25	-	-	-	-	25	-	-
25	31	25	25	44	44	17	25.4	8	1
32	38	31	31	54	54	21	31.75	10	1-1/4
-	-	32	-	-	-	-	32	-	-

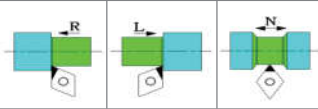
6 Thickness			
ISO		ANSI	
Code	Size	Code	Size
S	mm	S	inch
01	1.59	1	1/16
02	2.38	(1.5)	3/32
T2	2.78	-	-
03	3.18	2	1/8
T3	3.97	(2.5)	5/32
04	4.76	3	3/16
05	5.56	(3.5)	7/32
06	6.35	4	1/4
07	7.94	5	5/16
09	9.525	6	3/8

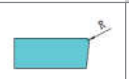
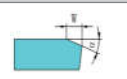
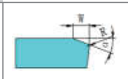

7 Nose radius			
ISO		ANSI	
Code	Size	Code	Size
Rε	mm	Rε	inch
00		00	.000
003	0.03	(0.1)	.001
01	0.1	(0.2)	.004
02	0.2	(0.5)	.008
04	0.4	1	1/64
08	0.8	2	1/32
12	1.2	3	3/64
16	1.6	4	1/16
20	2.0	5	5/64
24	2.4	6	3/32
28	2.8	7	7/64
32	3.2	8	1/8
M0		0	circular



8 Edges						
Code	1	2	3	4	6	8
notes	1 edge	2 edges	3 edges	4 edges	6 edges	8 edges

9 Cutting Direction			
Code	R	L	N
notes	R	L	N











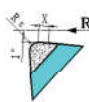


10 Cutting Edge Design			
E	T	S	F
Honed	Chamfered	Chamfered+Honed	Sharp Edge
			

11 Chamfered Width						
Code	000	005	010	015	020	030
Size	-	0.05	0.1	0.15	0.2	0.3

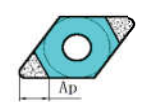
12 Chamfered Angle									
Code	$\alpha$	00	10	15	20	25	30	35	45
Size	$^\circ$	-	10	15	20	25	30	35	45

13 Honed Size						
Code	00	02	05	10	20	30
Size	-	0.002	0.005	0.01	0.02	0.03

14 Insert type						
SF	SL	SS	CB	CS	SWW	SWU
Full Face	Solid Tipped Corner	Solid CBN	Standard Tipped Corners	Standard Full Edge	Solid Tipped Corners Type 'W'	Solid Tipped Corners Type 'U'
						

15 Cutting Edge Design			
ST	WG	CBRB	CBC1
Nose Radius	Wiper	Chip Breaker	Chip Breaker
			

16 Cutting Edge Length						
Code	Ap	22	25	28	30	40
Size		2.2	2.5	2.8	3.0	4.0



17 Surface Treatment			
S	Uncoated	C1	Coated
		R & D	

# Specifications of Coated PCBN Insert with Chip-breaker(CBC1)

## CC 80° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	CCGT060202-1N S0052510	SLCBC122C2	●	●	●	●	CCGT2(1.5)(0.5)-1N S0052510	SLCBC122C2	6.35	2.8	2.38	0.2	2.2
	CCGT060204-1N S0052510		●	●	●	●	CCGT2(1.5)1-1N S0052510					0.4	
	CCGT060208-1N S0052510		●	●	●	●	CCGT2(1.5)2-1N S0052510					0.8	
CCGT060202-2N S0052510	●		●	●	●	CCGT2(1.5)(0.5)-2N S0052510	0.2						
CCGT060204-2N S0052510	●		●	●	●	CCGT2(1.5)1-2N S0052510	0.4						
CCGT060208-2N S0052510	●		●	●	●	CCGT2(1.5)2-2N S0052510	0.8						

## CC 80° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	CCGT09T302-1N S0052510	SLCBC122C2	●	●	●	●	CCGT3(2.5)(0.5)-1N S0052510	SLCBC122C2	9.525	4.4	3.97	0.2	2.2
	CCGT09T304-1N S0052510		●	●	●	●	CCGT3(2.5)1-1N S0052510					0.4	
	CCGT09T308-1N S0052510		●	●	●	●	CCGT3(2.5)2-1N S0052510					0.8	
CCGT09T302-2N S0052510	●		●	●	●	CCGT3(2.5)(0.5)-2N S0052510	0.2						
CCGT09T304-2N S0052510	●		●	●	●	CCGT3(2.5)1-2N S0052510	0.4						
CCGT09T308-2N S0052510	●		●	●	●	CCGT3(2.5)2-2N S0052510	0.8						

## CC 80° PCBN Negative Inserts



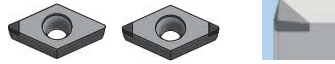
Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	CCGT120402-1N S0052510	SLCBC122C2	●	●	●	●	CCGT43(0.5)-1N S0052510	SLCBC122C2	12.7	5.5	4.76	0.2	2.2
	CCGT120404-1N S0052510		●	●	●	●	CCGT431-1N S0052510					0.4	
	CCGT120408-1N S0052510		●	●	●	●	CCGT432-1N S0052510					0.8	
	CCGT120412-1N S0052510		●	●	●	●	CCGT433-1N S0052510					1.2	
CCGT120402-2N S0052510	●		●	●	●	CCGT43(0.5)-2N S0052510	0.2						
CCGT120404-2N S0052510	●		●	●	●	CCGT431-2N S0052510	0.4						
CCGT120408-2N S0052510	●		●	●	●	CCGT432-2N S0052510	0.8						
CCGT120412-2N S0052510	●		●	●	●	CCGT433-2N S0052510	1.2						

Examples: ISO: CCGT120408-2N S0052510 SLCBC122C2 PNH1020  
 ANSI: CCGT432-2N S0052510 SLCBC122C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBC1)

**DC**

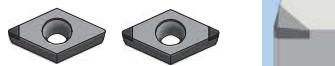
55° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	DCGT070202-1N S0052510	SLCBC122C2	●	●	●	●	DCGT2(1.5)(0.5)-1N S0052510	SLCBC122C2	6.35	2.8	2.38	0.2	2.2
	DCGT070204-1N S0052510		●	●	●	●	DCGT2(1.5)1-1N S0052510					0.4	
	DCGT070208-1N S0052510		●	●	●	●	DCGT2(1.5)2-1N S0052510					0.8	
DCGT070202-2N S0052510	●		●	●	●	DCGT2(1.5)(0.5)-2N S0052510	0.2						
DCGT070204-2N S0052510	●		●	●	●	DCGT2(1.5)1-2N S0052510	0.4						
DCGT070208-2N S0052510	●		●	●	●	DCGT2(1.5)2-2N S0052510	0.8						

**DC**

55° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	DCGT11T302-1N S0052510	SLCBC122C2	●	●	●	●	DCGT3(2.5)(0.5)-1N S0052510	SLCBC122C2	9.525	4.4	3.97	0.2	2.2
	DCGT11T304-1N S0052510		●	●	●	●	DCGT3(2.5)1-1N S0052510					0.4	
	DCGT11T308-1N S0052510		●	●	●	●	DCGT3(2.5)2-1N S0052510					0.8	
	DCGT11T312-1N S0052510		●	●	●	●	DCGT3(2.5)3-1N S0052510					1.2	
DCGT11T302-2N S0052510	●		●	●	●	DCGT3(2.5)(0.5)-2N S0052510	0.2						
DCGT11T304-2N S0052510	●		●	●	●	DCGT3(2.5)1-2N S0052510	0.4						
DCGT11T308-2N S0052510	●		●	●	●	DCGT3(2.5)2-2N S0052510	0.8						
DCGT11T312-2N S0052510	●		●	●	●	DCGT3(2.5)3-2N S0052510	1.2						

Examples: ISO: DCGT11T308-2N S0052510 SLCBC122C2 PNH1020  
 ANSI: DCGT3(2.5)2-2N S0052510 SLCBC122C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBC1)

## TP 60° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	TPGT080202-1N S0052510	SLCBC122C2	●	●	●	●	TPGT(1.5)(1.5)(0.5)-1N S0052510	SLCBC122C2	4.76	2.4	2.38	0.2	2.2
	TPGT080204-1N S0052510		●	●	●	●	TPGT(1.5)(1.5)1-1N S0052510					0.4	
	TPGT080202-3N S0052510		●	●	●	●	TPGT(1.5)(1.5)(0.5)-3N S0052510					0.2	
	TPGT080204-3N S0052510		●	●	●	●	TPGT(1.5)(1.5)1-3N S0052510					0.4	

## TP 60° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	TPGT090202-1N S0052510	SLCBC122C2	●	●	●	●	TPGT(1.8)(1.5)(0.5)-1N S0052510	SLCBC122C2	5.56	2.8	2.38	0.2	2.2
	TPGT090204-1N S0052510		●	●	●	●	TPGT(1.8)(1.5)1-1N S0052510					0.4	
	TPGT090208-1N S0052510		●	●	●	●	TPGT(1.8)(1.5)2-1N S0052510					0.8	
	TPGT090202-3N S0052510		●	●	●	●	TPGT(1.8)(1.5)(0.5)-3N S0052510					0.2	
	TPGT090204-3N S0052510		●	●	●	●	TPGT(1.8)(1.5)1-3N S0052510					0.4	
	TPGT090208-3N S0052510		●	●	●	●	TPGT(1.8)(1.5)2-3N S0052510					0.8	

## TP 60° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	TPGT110302-1N S0052510	SLCBC122C2	●	●	●	●	TPGT22(0.5)-1N S0052510	SLCBC122C2	6.35	3.3	3.18	0.2	2.2
	TPGT110304-1N S0052510		●	●	●	●	TPGT221-1N S0052510					0.4	
	TPGT110302-3N S0052510		●	●	●	●	TPGT22(0.5)-3N S0052510					0.2	
	TPGT110304-3N S0052510		●	●	●	●	TPGT221-3N S0052510					0.4	

Examples: ISO: TPGT090208-3N S0052510 SLCBC122C2 PNH1020  
ANSI: TPGT3(1.8)(1.5)2-3N S0052510 SLCBC122C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBC1)

## TP 60° PCBN Negative Inserts



Shape	ISO	Tip Shape	H			ANSI	Tip Shape	Dimensions in mm				
			PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	TPGT160302-1N S0052510	SLCBC122C2	●	●	●	●	SLCBC122C2	9.525	4.4	3.18	0.2	2.2
	TPGT160304-1N S0052510		●	●	●	●					0.4	
	TPGT160308-1N S0052510		●	●	●	●					0.8	
	TPGT160302-3N S0052510		●	●	●	●					0.2	
	TPGT160304-3N S0052510		●	●	●	●					0.4	
	TPGT160308-3N S0052510		●	●	●	●					0.8	

## TP 60° PCBN Negative Inserts



Shape	ISO	Tip Shape	H			ANSI	Tip Shape	Dimensions in mm				
			PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	TPGT160402-1N S0052510	SLCBC122C2	●	●	●	●	SLCBC122C2	9.525	4.4	4.76	0.2	2.2
	TPGT160404-1N S0052510		●	●	●	●					0.4	
	TPGT160408-1N S0052510		●	●	●	●					0.8	
	TPGT160402-3N S0052510		●	●	●	●					0.2	
	TPGT160404-3N S0052510		●	●	●	●					0.4	
	TPGT160408-3N S0052510		●	●	●	●					0.8	

Examples: ISO: TPGT160408-3N S0052510 SLCBC122C2 PNH1020  
ANSI: TPGT322-3N S0052510 SLCBC122C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBC1)

**VB**

35° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	VBGT 110302-1N S00525 10	SLCBC122C2	●	●	●	●	VBGT22(05)-1N S00525 10	SLCBC122C2	6.35	2.8	3.18	0.2	2.2
	VBGT 110304-1N S00525 10		●	●	●	●	VBGT221-1N S00525 10					0.4	
	VBGT 110308-1N S00525 10		●	●	●	●	VBGT222-1N S00525 10					0.8	
	VBGT 110302-2N S00525 10		●	●	●	●	VBGT22(05)-2N S00525 10					0.2	
	VBGT 110304-2N S00525 10		●	●	●	●	VBGT221-2N S00525 10					0.4	
	VBGT 110308-2N S00525 10		●	●	●	●	VBGT222-2N S00525 10					0.8	

**VB**

35° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	VBGT 160402-1N S00525 10	SLCBC122C2	●	●	●	●	VBGT33(0.5)-1N S00525 10	SLCBC122C2	9.525	4.4	4.76	0.2	2.2
	VBGT 160404-1N S00525 10		●	●	●	●	VBGT331-1N S00525 10					0.4	
	VBGT 160408-1N S00525 10		●	●	●	●	VBGT332-1N S00525 10					0.8	
	VBGT 160412-1N S00525 10		●	●	●	●	VBGT333-1N S00525 10					1.2	
	VBGT 160402-2N S00525 10		●	●	●	●	VBGT33(0.5)-2N S00525 10					0.2	
	VBGT 160404-2N S00525 10		●	●	●	●	VBGT331-2N S00525 10					0.4	
	VBGT 160408-2N S00525 10		●	●	●	●	VBGT332-2N S00525 10					0.8	
	VBGT 160412-2N S00525 10		●	●	●	●	VBGT333-2N S00525 10					1.2	

**VC**

35° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	VCGT 080202-1N S00525 10	SLCBC122C2	●	●	●	●	VCGT(1.5)(1.5)(0.5)-1N S00525 10	SLCBC122C2	4.76	2.2	2.38	0.2	2.2
	VCGT 080204-1N S00525 10		●	●	●	●	VCGT(1.5)(1.5)1-1N S00525 10					0.4	
	VCGT 080208-1N S00525 10		●	●	●	●	VCGT(1.5)(1.5)2-1N S00525 10					0.8	
	VCGT 080202-2N S00525 10		●	●	●	●	VCGT(1.5)(1.5)(0.5)-2N S00525 10					0.2	
	VCGT 080204-2N S00525 10		●	●	●	●	VCGT(1.5)(1.5)1-2N S00525 10					0.4	
	VCGT 080208-2N S00525 10		●	●	●	●	VCGT(1.5)(1.5)2-2N S00525 10					0.8	

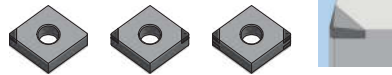
Examples: ISO: VCGT080202-1N S00525 10 SLCBC122C2 PNH1020

ANSI: VCGT(1.5)(1.5)(0.5)-1N S00525 10 SLCBC122C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBC1)

**CN**

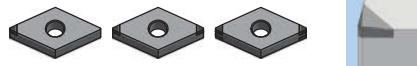
80° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	CNGM120402-1N S0052510	SLCBC122C2	●	●	●	●	CNGM43(0.5)-1N S0052510	SLCBC122C2	12.7	5.16	4.76	0.2	2.2
	CNGM120404-1N S0052510		●	●	●	●	CNGM431-1N S0052510					0.4	
	CNGM120408-1N S0052510		●	●	●	●	CNGM432-1N S0052510					0.8	
	CNGM120412-1N S0052510		●	●	●	●	CNGM433-1N S0052510					1.2	
	CNGM120402-2N S0052510		●	●	●	●	CNGM43(0.5)-2N S0052510					0.2	
	CNGM120404-2N S0052510		●	●	●	●	CNGM431-2N S0052510					0.4	
	CNGM120408-2N S0052510		●	●	●	●	CNGM432-2N S0052510					0.8	
	CNGM120412-2N S0052510		●	●	●	●	CNGM433-2N S0052510					1.2	
	CNGG120402-4N S0052510		●	●	●	●	CNGG43(0.5)-4N S0052510					0.2	
	CNGG120404-4N S0052510		●	●	●	●	CNGG431-4N S0052510					0.4	
	CNGG120408-4N S0052510		●	●	●	●	CNGG432-4N S0052510					0.8	
	CNGG120412-4N S0052510		●	●	●	●	CNGG433-4N S0052510					1.2	

**DN**

55° PCBN Negative Inserts



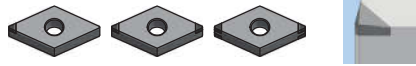
Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	DNGM150402-1N S0052510	SLCBC122C2	●	●	●	●	DNGM43(0.5)-1N S0052510	SLCBC122C2	12.7	5.16	4.76	0.2	2.2
	DNGM150404-1N S0052510		●	●	●	●	DNGM431-1N S0052510					0.4	
	DNGM150408-1N S0052510		●	●	●	●	DNGM432-1N S0052510					0.8	
	DNGM150412-1N S0052510		●	●	●	●	DNGM433-1N S0052510					1.2	
	DNGM150402-2N S0052510		●	●	●	●	DNGM43(0.5)-2N S0052510					0.2	
	DNGM150404-2N S0052510		●	●	●	●	DNGM431-2N S0052510					0.4	
	DNGM150408-2N S0052510		●	●	●	●	DNGM432-2N S0052510					0.8	
	DNGM150412-2N S0052510		●	●	●	●	DNGM433-2N S0052510					1.2	
	DNGG150402-4N S0052510		●	●	●	●	DNGG43(0.5)-4N S0052510					0.2	
	DNGG150404-4N S0052510		●	●	●	●	DNGG431-4N S0052510					0.4	
	DNGG150408-4N S0052510		●	●	●	●	DNGG432-4N S0052510					0.8	
	DNGG150412-4N S0052510		●	●	●	●	DNGG433-4N S0052510					1.2	

Examples: ISO: DNGG150408-4N S0052510 SLCBC122C2 PNH1020  
ANSI: DNGG432-4N S0052510 SLCBC122C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBC1)

**DN**

55° PCBN Negative Inserts



Shape	ISO	Tip Shape	H			ANSI	Tip Shape	Dimensions in mm					
			PNH0120	PNH1020	PNH2018			PNH3019	ic	∅d	s	r	la
	DNGM150602-1N S0052510	SLCBC122C2	●	●	●	●	DNGM44(0.5)-1N S0052510	SLCBC122C2	12.7	5.16	6.35	0.2	2.2
	DNGM150604-1N S0052510		●	●	●	●	DNGM441-1N S0052510					0.4	
	DNGM150608-1N S0052510		●	●	●	●	DNGM442-1N S0052510					0.8	
	DNGM150612-1N S0052510		●	●	●	●	DNGM443-1N S0052510					1.2	
	DNGM150602-2N S0052510		●	●	●	●	DNGM44(0.5)-2N S0052510					0.2	
	DNGM150604-2N S0052510		●	●	●	●	DNGM441-2N S0052510					0.4	
	DNGM150608-2N S0052510		●	●	●	●	DNGM442-2N S0052510					0.8	
	DNGM150612-2N S0052510		●	●	●	●	DNGM443-2N S0052510					1.2	
	DNGG150602-4N S0052510		●	●	●	●	DNGG44(0.5)-4N S0052510					0.2	
	DNGG150604-4N S0052510		●	●	●	●	DNGG441-4N S0052510					0.4	
	DNGG150608-4N S0052510		●	●	●	●	DNGG442-4N S0052510					0.8	
	DNGG150612-4N S0052510		●	●	●	●	DNGG443-4N S0052510					1.2	

**SN**

90° PCBN Negative Inserts



Shape	ISO	Tip Shape	H			ANSI	Tip Shape	Dimensions in mm					
			PNH0120	PNH1020	PNH2018			PNH3019	ic	∅d	s	r	la
	SNGM120402-1N S0052510	SLCBC122C2	●	●	●	●	SNGM43(0.5)-1N S0052510	SLCBC122C2	12.7	5.16	4.76	0.2	2.2
	SNGM120404-1N S0052510		●	●	●	●	SNGM431-1N S0052510					0.4	
	SNGM120408-1N S0052510		●	●	●	●	SNGM432-1N S0052510					0.8	
	SNGM120412-1N S0052510		●	●	●	●	SNGM433-1N S0052510					1.2	
	SNGM120402-4N S0052510		●	●	●	●	SNGM43(0.5)-4N S0052510					0.2	
	SNGM120404-4N S0052510		●	●	●	●	SNGM431-4N S0052510					0.4	
	SNGM120408-4N S0052510		●	●	●	●	SNGM432-4N S0052510					0.8	
	SNGM120412-4N S0052510		●	●	●	●	SNGM433-4N S0052510					1.2	
	SNGG120402-8N S0052510		●	●	●	●	SNGG43(0.5)-8N S0052510					0.2	
	SNGG120404-8N S0052510		●	●	●	●	SNGG431-8N S0052510					0.4	
	SNGG120408-8N S0052510		●	●	●	●	SNGG432-8N S0052510					0.8	
	SNGG120412-8N S0052510		●	●	●	●	SNGG433-8N S0052510					1.2	

Examples: ISO: SNGG120408-8N S0052510 SLCBC122C2 PNH1020  
 ANSI: SNGG432-8N S0052510 SLCBC122C2 PNH1020



# Specifications of Coated PCBN Insert with Chip-breaker(CBC1)

## TN 60° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	TNGM160402-1N S0052510	SLCBC122C2	●	●	●	●	TNGM33(0.5)-1N S0052510	SLCBC122C2	9.525	3.81	4.76	0.2	2.2
	TNGM160404-1N S0052510		●	●	●	●	TNGM331-1N S0052510					0.4	
	TNGM160408-1N S0052510		●	●	●	●	TNGM332-1N S0052510					0.8	
	TNGM160412-1N S0052510		●	●	●	●	TNGM333-1N S0052510					1.2	
	TNGM160402-3N S0052510		●	●	●	●	TNGM33(0.5)-3N S0052510					0.2	
	TNGM160404-3N S0052510		●	●	●	●	TNGM331-3N S0052510					0.4	
	TNGM160408-3N S0052510		●	●	●	●	TNGM332-3N S0052510					0.8	
	TNGM160412-3N S0052510		●	●	●	●	TNGM333-3N S0052510					1.2	
	TNGG160402-6N S0052510		●	●	●	●	TNGG33(0.5)-6N S0052510					0.2	
	TNGG160404-6N S0052510		●	●	●	●	TNGG331-6N S0052510					0.4	
	TNGG160408-6N S0052510		●	●	●	●	TNGG332-6N S0052510					0.8	
	TNGG160412-6N S0052510		●	●	●	●	TNGG333-6N S0052510					1.2	

## VN 35° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	VNGM160402-1N S0052510	SLCBC122C2	●	●	●	●	VNGM33(0.5)-1N S0052510	SLCBC122C2	9.525	3.81	4.76	0.2	2.2
	VNGM160404-1N S0052510		●	●	●	●	VNGM331-1N S0052510					0.4	
	VNGM160408-1N S0052510		●	●	●	●	VNGM332-1N S0052510					0.8	
	VNGM160412-1N S0052510		●	●	●	●	VNGM333-1N S0052510					1.2	
	VNGM160402-2N S0052510		●	●	●	●	VNGM33(0.5)-2N S0052510					0.2	
	VNGM160404-2N S0052510		●	●	●	●	VNGM331-2N S0052510					0.4	
	VNGM160408-2N S0052510		●	●	●	●	VNGM332-2N S0052510					0.8	
	VNGM160412-2N S0052510		●	●	●	●	VNGM333-2N S0052510					1.2	
	VNGG160402-4N S0052510		●	●	●	●	VNGG33(0.5)-4N S0052510					0.2	
	VNGG160404-4N S0052510		●	●	●	●	VNGG331-4N S0052510					0.4	
	VNGG160408-4N S0052510		●	●	●	●	VNGG332-4N S0052510					0.8	
	VNGG160412-4N S0052510		●	●	●	●	VNGG333-4N S0052510					1.2	

Examples: ISO: VNGG160412-4N S0052510 SLCBC122C2 PNH1020  
ANSI: VNGG333-4N S0052510 SLCBC122C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBC1)



80° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	WNGM080402-1N S0052510	SLCBC122C2	●	●	●	●	WNGM43(0.5)-1N S0052510	SLCBC122C2	12.7	5.16	4.76	0.2	2.2
	WNGM080404-1N S0052510		●	●	●	●	WNGM431-1N S0052510					0.4	
	WNGM080408-1N S0052510		●	●	●	●	WNGM432-1N S0052510					0.8	
	WNGM080412-1N S0052510		●	●	●	●	WNGM433-1N S0052510					1.2	
	WNGM080402-3N S0052510		●	●	●	●	WNGM43(0.5)-3N S0052510					0.2	
	WNGM080404-3N S0052510		●	●	●	●	WNGM431-3N S0052510					0.4	
	WNGM080408-3N S0052510		●	●	●	●	WNGM432-3N S0052510					0.8	
	WNGM080412-3N S0052510		●	●	●	●	WNGM433-3N S0052510					1.2	
	WNGG080402-6N S0052510		●	●	●	●	WNGG43(0.5)-6N S0052510					0.2	
	WNGG080404-6N S0052510		●	●	●	●	WNGG431-6N S0052510					0.4	
	WNGG080408-6N S0052510		●	●	●	●	WNGG432-6N S0052510					0.8	
	WNGG080412-6N S0052510		●	●	●	●	WNGG433-6N S0052510					1.2	

Examples: ISO: WNGG080412-6N S0052510 SLCBC122C2 PNH1020  
 ANSI: WNGG433-6N S0052510 SLCBC122C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBRB)

## CC 80° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	CCGT060202-1N S01025 10	SLCBBR22C2	●	●	●	●	CCGT2(1.5)(0.5)-1N S01025 10	SLCBBR22C2	6.35	2.8	2.38	0.2	2.2
	CCGT060204-1N S01025 10		●	●	●	●	CCGT2(1.5)1-1N S01025 10					0.4	
	CCGT060208-1N S01025 10		●	●	●	●	CCGT2(1.5)2-1N S01025 10					0.8	
CCGT060202-2N S01025 10	●		●	●	●	CCGT2(1.5)(0.5)-2N S01025 10	0.2						
CCGT060204-2N S01025 10	●		●	●	●	CCGT2(1.5)1-2N S01025 10	0.4						
CCGT060208-2N S01025 10	●		●	●	●	CCGT2(1.5)2-2N S01025 10	0.8						

## CC 80° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	CCGT09T302-1N S01025 10	SLCBBR22C2	●	●	●	●	CCGT3(2.5)(0.5)-1N S01025 10	SLCBBR22C2	9.525	4.4	3.97	0.2	2.2
	CCGT09T304-1N S01025 10		●	●	●	●	CCGT3(2.5)1-1N S01025 10					0.4	
	CCGT09T308-1N S01025 10		●	●	●	●	CCGT3(2.5)2-1N S01025 10					0.8	
CCGT09T302-2N S01025 10	●		●	●	●	CCGT3(2.5)(0.5)-2N S01025 10	0.2						
CCGT09T304-2N S01025 10	●		●	●	●	CCGT3(2.5)1-2N S01025 10	0.4						
CCGT09T308-2N S01025 10	●		●	●	●	CCGT3(2.5)2-2N S01025 10	0.8						

## CC 80° PCBN Negative Inserts

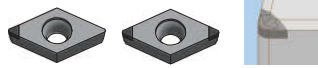


Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	CCGT120402-1N S01025 10	SLCBBR22C2	●	●	●	●	CCGT43(0.5)-1N S01025 10	SLCBBR22C2	12.7	5.5	4.76	0.2	2.2
	CCGT120404-1N S01025 10		●	●	●	●	CCGT431-1N S01025 10					0.4	
	CCGT120408-1N S01025 10		●	●	●	●	CCGT432-1N S01025 10					0.8	
	CCGT120412-1N S01025 10		●	●	●	●	CCGT433-1N S01025 10					1.2	
CCGT120402-2N S01025 10	●		●	●	●	CCGT43(0.5)-2N S01025 10	0.2						
CCGT120404-2N S01025 10	●		●	●	●	CCGT431-2N S01025 10	0.4						
CCGT120408-2N S01025 10	●		●	●	●	CCGT432-2N S01025 10	0.8						
CCGT120412-2N S01025 10	●		●	●	●	CCGT433-2N S01025 10	1.2						

Examples: ISO: CCGT120408-2N S01025 10 SLCBBR22C2 PNH1020  
 ANSI: CCGT432-2N S01025 10 SLCBBR22C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBRB)

## DC 55° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	DCGT070202-1N S0102510	SLCBBR22C2	●	●	●	●	DCGT2(1.5)(0.5)-1N S0102510	SLCBBR22C2	6.35	2.8	2.38	0.2	2.2
	DCGT070204-1N S0102510		●	●	●	●	DCGT2(1.5)1-1N S0102510					0.4	
	DCGT070208-1N S0102510		●	●	●	●	DCGT2(1.5)2-1N S0102510					0.8	
	DCGT070202-2N S0102510		●	●	●	●	DCGT2(1.5)(0.5)-2N S0102510					0.2	
	DCGT070204-2N S0102510		●	●	●	●	DCGT2(1.5)1-2N S0102510					0.4	
	DCGT070208-2N S0102510		●	●	●	●	DCGT2(1.5)2-2N S0102510					0.8	

## DC 55° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	DCGT11T302-1N S0102510	SLCBBR22C2	●	●	●	●	DCGT3(2.5)(0.5)-1N S0102510	SLCBBR22C2	9.525	4.4	3.97	0.2	2.2
	DCGT11T304-1N S0102510		●	●	●	●	DCGT3(2.5)1-1N S0102510					0.4	
	DCGT11T308-1N S0102510		●	●	●	●	DCGT3(2.5)2-1N S0102510					0.8	
	DCGT11T312-1N S0102510		●	●	●	●	DCGT3(2.5)3-1N S0102510					1.2	
	DCGT11T302-2N S0102510		●	●	●	●	DCGT3(2.5)(0.5)-2N S0102510					0.2	
	DCGT11T304-2N S0102510		●	●	●	●	DCGT3(2.5)1-2N S0102510					0.4	
	DCGT11T308-2N S0102510		●	●	●	●	DCGT3(2.5)2-2N S0102510					0.8	
	DCGT11T312-2N S0102510		●	●	●	●	DCGT3(2.5)3-2N S0102510					1.2	

Examples: ISO: DCGT11T308-2N S0102510 SLCBBR22C2 PNH1020  
 ANSI: DCGT3(2.5)2-2N S0102510 SLCBBR22C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBRB)

## TP 60° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	TPGT080202-1N S0102510	SLCBBR22C2	●	●	●	●	TPGT(1.5)(1.5)(0.5)-1N S0102510	SLCBBR22C2	4.76	2.4	2.38	0.2	2.2
	TPGT080204-1N S0102510		●	●	●	●	TPGT(1.5)(1.5)1-1N S0102510					0.4	
	TPGT080202-3N S0102510		●	●	●	●	TPGT(1.5)(1.5)(0.5)-3N S0102510					0.2	
	TPGT080204-3N S0102510		●	●	●	●	TPGT(1.5)(1.5)1-3N S0102510					0.4	

## TP 60° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	TPGT090202-1N S0102510	SLCBBR22C2	●	●	●	●	TPGT(1.8)(1.5)(0.5)-1N S0102510	SLCBBR22C2	5.56	2.8	2.38	0.2	2.2
	TPGT090204-1N S0102510		●	●	●	●	TPGT(1.8)(1.5)1-1N S0102510					0.4	
	TPGT090208-1N S0102510		●	●	●	●	TPGT(1.8)(1.5)2-1N S0102510					0.8	
	TPGT090202-3N S0102510		●	●	●	●	TPGT(1.8)(1.5)(0.5)-3N S0102510					0.2	
	TPGT090204-3N S0102510		●	●	●	●	TPGT(1.8)(1.5)1-3N S0102510					0.4	
	TPGT090208-3N S0102510		●	●	●	●	TPGT(1.8)(1.5)2-3N S0102510					0.8	

## TP 60° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	TPGT110302-1N S0102510	SLCBBR22C2	●	●	●	●	TPGT22(0.5)-1N S0102510	SLCBBR22C2	6.35	3.3	3.18	0.2	2.2
	TPGT110304-1N S0102510		●	●	●	●	TPGT221-1N S0102510					0.4	
	TPGT110302-3N S0102510		●	●	●	●	TPGT22(0.5)-3N S0102510					0.2	
	TPGT110304-3N S0102510		●	●	●	●	TPGT221-3N S0102510					0.4	

Examples: ISO: TPGT090208-3N S0102510 SLCBBR22C2 PNH1020  
ANSI: TPGT3(1.8)(1.5)2-3N S0102510 SLCBBR22C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBRB)

## TP 60° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	TPGT160302-1N S0102510	SLCBBR22C2	●	●	●	●	TPGT32(0.5)-1N S0102510	SLCBBR22C2	9.525	4.4	3.18	0.2	2.2
	TPGT160304-1N S0102510		●	●	●	●	TPGT321-1N S0102510					0.4	
	TPGT160308-1N S0102510		●	●	●	●	TPGT322-1N S0102510					0.8	
TPGT160302-3N S0102510	●		●	●	●	TPGT32(0.5)-3N S0102510	0.2						
TPGT160304-3N S0102510	●		●	●	●	TPGT321-3N S0102510	0.4						
TPGT160308-3N S0102510	●		●	●	●	TPGT322-3N S0102510	0.8						

## TP 60° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	Ød	s	r	la
	TPGT160402-1N S0102510	SLCBBR22C2	●	●	●	●	TPGT33(0.5)-1N S0102510	SLCBBR22C2	9.525	4.4	4.76	0.2	2.2
	TPGT160404-1N S0102510		●	●	●	●	TPGT331-1N S0102510					0.4	
	TPGT160408-1N S0102510		●	●	●	●	TPGT332-1N S0102510					0.8	
TPGT160402-3N S0102510	●		●	●	●	TPGT33(0.5)-3N S0102510	0.2						
TPGT160404-3N S0102510	●		●	●	●	TPGT331-3N S0102510	0.4						
TPGT160408-3N S0102510	●		●	●	●	TPGT332-3N S0102510	0.8						

Examples: ISO: TPGT160408-3N S0102510 SLCBBR22C2 PNH1020

ANSI: TPGT322-3N S0102510 SLCBBR22C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBRB)

**VB**

35° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	VBGT110302-1N S0102510	SLCBRB22C2	●	●	●	●	VBGT22(05)-1N S0102510	SLCBRB22C2	6.35	2.8	3.18	0.2	2.2
	VBGT110304-1N S0102510		●	●	●	●	VBGT221-1N S0102510					0.4	
	VBGT110308-1N S0102510		●	●	●	●	VBGT222-1N S0102510					0.8	
VBGT110302-2N S0102510	●		●	●	●	VBGT22(05)-2N S0102510	0.2						
VBGT110304-2N S0102510	●		●	●	●	VBGT221-2N S0102510	0.4						
VBGT110308-2N S0102510	●		●	●	●	VBGT222-2N S0102510	0.8						

**VB**

35° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	VBGT160402-1N S0102510	SLCBRB22C2	●	●	●	●	VBGT33(0.5)-1N S0102510	SLCBRB22C2	9.525	4.4	4.76	0.2	2.2
	VBGT160404-1N S0102510		●	●	●	●	VBGT331-1N S0102510					0.4	
	VBGT160408-1N S0102510		●	●	●	●	VBGT332-1N S0102510					0.8	
	VBGT160412-1N S0102510		●	●	●	●	VBGT333-1N S0102510					1.2	
VBGT160402-2N S0102510	●		●	●	●	VBGT33(0.5)-2N S0102510	0.2						
VBGT160404-2N S0102510	●		●	●	●	VBGT331-2N S0102510	0.4						
VBGT160408-2N S0102510	●		●	●	●	VBGT332-2N S0102510	0.8						
VBGT160412-2N S0102510	●		●	●	●	VBGT333-2N S0102510	1.2						

**VC**

35° PCBN Negative Inserts



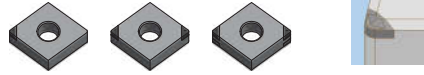
Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	VCGT080202-1N S0102510	SLCBRB22C2	●	●	●	●	VCGT(1.5)(1.5)(0.5)-1N S0102510	SLCBRB22C2	4.76	2.2	2.38	0.2	2.2
	VCGT080204-1N S0102510		●	●	●	●	VCGT(1.5)(1.5)1-1N S0102510					0.4	
	VCGT080208-1N S0102510		●	●	●	●	VCGT(1.5)(1.5)2-1N S0102510					0.8	
VCGT080202-2N S0102510	●		●	●	●	VCGT(1.5)(1.5)(0.5)-2N S0102510	0.2						
VCGT080204-2N S0102510	●		●	●	●	VCGT(1.5)(1.5)1-2N S0102510	0.4						
VCGT080208-2N S0102510	●		●	●	●	VCGT(1.5)(1.5)2-2N S0102510	0.8						

Examples: ISO: VCGT080202-1N S0102510 SLCBRB22C2 PNH1020  
 ANSI: VCGT(1.5)(1.5)(0.5)-1N S0102510 SLCBRB22C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBRB)

**CN**

80° PCBN Negative Inserts



Shape	ISO	Tip Shape	H			ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH3019			ic	∅d	s	r	la
	CNGM120402-1N S0102510	SLCBBR22C2	●	●	●	CNGM43(0.5)-1N S0102510	SLCBBR22C2	12.7	5.16	4.76	0.2	2.2
	CNGM120404-1N S0102510		●	●	●	CNGM431-1N S0102510					0.4	
	CNGM120408-1N S0102510		●	●	●	CNGM432-1N S0102510					0.8	
	CNGM120412-1N S0102510		●	●	●	CNGM433-1N S0102510					1.2	
	CNGM120402-2N S0102510		●	●	●	CNGM43(0.5)-2N S0102510					0.2	
	CNGM120404-2N S0102510		●	●	●	CNGM431-2N S0102510					0.4	
	CNGM120408-2N S0102510		●	●	●	CNGM432-2N S0102510					0.8	
	CNGM120412-2N S0102510		●	●	●	CNGM433-2N S0102510					1.2	
	CNGG120402-4N S0102510		●	●	●	CNGG43(0.5)-4N S0102510					0.2	
	CNGG120404-4N S0102510		●	●	●	CNGG431-4N S0102510					0.4	
	CNGG120408-4N S0102510		●	●	●	CNGG432-4N S0102510					0.8	
	CNGG120412-4N S0102510		●	●	●	CNGG433-4N S0102510					1.2	

**DN**

55° PCBN Negative Inserts



Shape	ISO	Tip Shape	H			ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH3019			ic	∅d	s	r	la
	DNGM150402-1N S0102510	SLCBBR22C2	●	●	●	DNGM43(0.5)-1N S0102510	SLCBBR22C2	12.7	5.16	4.76	0.2	2.2
	DNGM150404-1N S0102510		●	●	●	DNGM431-1N S0102510					0.4	
	DNGM150408-1N S0102510		●	●	●	DNGM432-1N S0102510					0.8	
	DNGM150412-1N S0102510		●	●	●	DNGM433-1N S0102510					1.2	
	DNGM150402-2N S0102510		●	●	●	DNGM43(0.5)-2N S0102510					0.2	
	DNGM150404-2N S0102510		●	●	●	DNGM431-2N S0102510					0.4	
	DNGM150408-2N S0102510		●	●	●	DNGM432-2N S0102510					0.8	
	DNGM150412-2N S0102510		●	●	●	DNGM433-2N S0102510					1.2	
	DNGG150402-4N S0102510		●	●	●	DNGG43(0.5)-4N S0102510					0.2	
	DNGG150404-4N S0102510		●	●	●	DNGG431-4N S0102510					0.4	
	DNGG150408-4N S0102510		●	●	●	DNGG432-4N S0102510					0.8	
	DNGG150412-4N S0102510		●	●	●	DNGG433-4N S0102510					1.2	

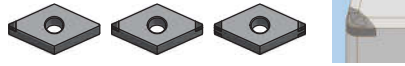
Examples: ISO: DNGG150408-4N S0102510 SLCBBR22C2 PNH1020  
ANSI: DNGG432-4N S0102510 SLCBBR22C2 PNH1020



# Specifications of Coated PCBN Insert with Chip-breaker(CBRB)

**DN**

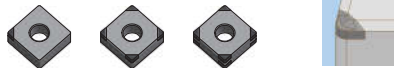
55° PCBN Negative Inserts



Shape	ISO	Tip Shape	Tip Shape			ANSI	Tip Shape	Dimensions in mm					
			PNH0120	PNH1020	PNH2018			PNH3019	ic	∅d	s	r	la
	DNGM150602-1N S0102510	SLCBRB22C2	●	●	●	●	SLCBRB22C2	12.7	5.16	6.35	2.2	0.2	
	DNGM150604-1N S0102510		●	●	●	●						0.4	
	DNGM150608-1N S0102510		●	●	●	●						0.8	
	DNGM150612-1N S0102510		●	●	●	●						1.2	
	DNGM150602-2N S0102510		●	●	●	●						DNGM44(0.5)-2N S0102510	0.2
	DNGM150604-2N S0102510		●	●	●	●						DNGM441-2N S0102510	0.4
	DNGM150608-2N S0102510		●	●	●	●						DNGM442-2N S0102510	0.8
	DNGM150612-2N S0102510		●	●	●	●						DNGM443-2N S0102510	1.2
	DNGG150602-4N S0102510		●	●	●	●						DNGG44(0.5)-4N S0102510	0.2
	DNGG150604-4N S0102510		●	●	●	●						DNGG441-4N S0102510	0.4
	DNGG150608-4N S0102510		●	●	●	●						DNGG442-4N S0102510	0.8
	DNGG150612-4N S0102510		●	●	●	●						DNGG443-4N S0102510	1.2

**SN**

90° PCBN Negative Inserts



Shape	ISO	Tip Shape	Tip Shape			ANSI	Tip Shape	Dimensions in mm					
			PNH0120	PNH1020	PNH2018			PNH3019	ic	∅d	s	r	la
	SNGM120402-1N S0102510	SLCBRB22C2	●	●	●	●	SLCBRB22C2	12.7	5.16	4.76	2.2	0.2	
	SNGM120404-1N S0102510		●	●	●	●						0.4	
	SNGM120408-1N S0102510		●	●	●	●						0.8	
	SNGM120412-1N S0102510		●	●	●	●						1.2	
	SNGM120402-4N S0102510		●	●	●	●						SNGM43(0.5)-4N S0102510	0.2
	SNGM120404-4N S0102510		●	●	●	●						SNGM431-4N S0102510	0.4
	SNGM120408-4N S0102510		●	●	●	●						SNGM432-4N S0102510	0.8
	SNGM120412-4N S0102510		●	●	●	●						SNGM433-4N S0102510	1.2
	SNGG120402-8N S0102510		●	●	●	●						SNGG43(0.5)-8N S0102510	0.2
	SNGG120404-8N S0102510		●	●	●	●						SNGG431-8N S0102510	0.4
	SNGG120408-8N S0102510		●	●	●	●						SNGG432-8N S0102510	0.8
	SNGG120412-8N S0102510		●	●	●	●						SNGG433-8N S0102510	1.2

Examples: ISO: SNGG120408-8N S0102510 SLCBRB22C2 PNH1020  
ANSI: SNGG432-8N S0102510 SLCBRB22C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBRB)

## TN 60° PCBN Negative Inserts



Shape	ISO	Tip Shape	H			ANSI	Tip Shape	Dimensions in mm					
			PNH0120	PNH1020	PNH2018			PNH3019	ic	∅d	s	r	la
	TNGM160402-1N S0102510	SLCBRB22C2	●	●	●	●	TNGM33(0.5)-1N S0102510	SLCBRB22C2	9.525	3.81	4.76	0.2	2.2
	TNGM160404-1N S0102510		●	●	●	●	TNGM331-1N S0102510					0.4	
	TNGM160408-1N S0102510		●	●	●	●	TNGM332-1N S0102510					0.8	
	TNGM160412-1N S0102510		●	●	●	●	TNGM333-1N S0102510					1.2	
	TNGM160402-3N S0102510		●	●	●	●	TNGM33(0.5)-3N S0102510					0.2	
	TNGM160404-3N S0102510		●	●	●	●	TNGM331-3N S0102510					0.4	
	TNGM160408-3N S0102510		●	●	●	●	TNGM332-3N S0102510					0.8	
	TNGM160412-3N S0102510		●	●	●	●	TNGM333-3N S0102510					1.2	
	TNGG160402-6N S0102510		●	●	●	●	TNGG33(0.5)-6N S0102510					0.2	
	TNGG160404-6N S0102510		●	●	●	●	TNGG331-6N S0102510					0.4	
	TNGG160408-6N S0102510		●	●	●	●	TNGG332-6N S0102510					0.8	
	TNGG160412-6N S0102510		●	●	●	●	TNGG333-6N S0102510					1.2	

## VN 35° PCBN Negative Inserts



Shape	ISO	Tip Shape	H			ANSI	Tip Shape	Dimensions in mm					
			PNH0120	PNH1020	PNH2018			PNH3019	ic	∅d	s	r	la
	VNGM160402-1N S0102510	SLCBRB22C2	●	●	●	●	VNGM33(0.5)-1N S0102510	SLCBRB22C2	9.525	3.81	4.76	0.2	2.2
	VNGM160404-1N S0102510		●	●	●	●	VNGM331-1N S0102510					0.4	
	VNGM160408-1N S0102510		●	●	●	●	VNGM332-1N S0102510					0.8	
	VNGM160412-1N S0102510		●	●	●	●	VNGM333-1N S0102510					1.2	
	VNGM160402-2N S0102510		●	●	●	●	VNGM33(0.5)-2N S0102510					0.2	
	VNGM160404-2N S0102510		●	●	●	●	VNGM331-2N S0102510					0.4	
	VNGM160408-2N S0102510		●	●	●	●	VNGM332-2N S0102510					0.8	
	VNGM160412-2N S0102510		●	●	●	●	VNGM333-2N S0102510					1.2	
	VNGG160402-4N S0102510		●	●	●	●	VNGG33(0.5)-4N S0102510					0.2	
	VNGG160404-4N S0102510		●	●	●	●	VNGG331-4N S0102510					0.4	
	VNGG160408-4N S0102510		●	●	●	●	VNGG332-4N S0102510					0.8	
	VNGG160412-4N S0102510		●	●	●	●	VNGG333-4N S0102510					1.2	

Examples: ISO: VNGG160412-4N S0102510 SLCBRB22C2 PNH1020  
 ANSI: VNGG333-4N S0102510 SLCBRB22C2 PNH1020

# Specifications of Coated PCBN Insert with Chip-breaker(CBRB)



80° PCBN Negative Inserts



Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	WNGM080402-1N S0102510	SLCBRB22C2	●	●	●	●	WNGM43(0.5)-1N S0102510	SLCBRB22C2	12.7	5.16	4.76	2.2	0.2
	WNGM080404-1N S0102510		●	●	●	●	WNGM431-1N S0102510						0.4
	WNGM080408-1N S0102510		●	●	●	●	WNGM432-1N S0102510						0.8
	WNGM080412-1N S0102510		●	●	●	●	WNGM433-1N S0102510						1.2
	WNGM080402-3N S0102510		●	●	●	●	WNGM43(0.5)-3N S0102510						0.2
	WNGM080404-3N S0102510		●	●	●	●	WNGM431-3N S0102510						0.4
	WNGM080408-3N S0102510		●	●	●	●	WNGM432-3N S0102510						0.8
	WNGM080412-3N S0102510		●	●	●	●	WNGM433-3N S0102510						1.2
	WNGG080402-4N S0102510		●	●	●	●	WNGM43(0.5)-6N S0102510						0.2
	WNGG080404-4N S0102510		●	●	●	●	WNGG431-6N S0102510						0.4
	WNGG080408-4N S0102510		●	●	●	●	WNGG432-6N S0102510						0.8
	WNGG080412-4N S0102510		●	●	●	●	WNGG433-6N S0102510						1.2

Examples: ISO: WNGG080412-6N S0102510 SLCBRB22C2 PNH1020  
 ANSI: WNGG433-6N S0102510 SLCBRB22C2 PNH1020

# Specifications of Coated PCBN Wiper Insert

## CC 80° PCBN Negative Inserts



Sharp Cutting Edge	Standard Cutting Edge	Strong Cutting Edge
S0101505	S0102510	S0202020

Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	CCGW09T304-1N S0101505	SLWG22C2	●	●	●	●	CCGW3(2.5)1-1N S0101505	SLWG22C2	9.525	4.4	3.97	0.2	2.2
	CCGW09T304-1N S0102510		●	●	●	●	CCGW3(2.5)1-1N S0102510					0.4	
	CCGW09T304-1N S0202020		●	●	●	●	CCGW3(2.5)1-1N S0202020					0.8	
	CCGW09T308-2N S0101505		●	●	●	●	CCGW3(2.5)2-2N S0101505					0.2	
	CCGW09T308-2N S0102510		●	●	●	●	CCGW3(2.5)2-2N S0102510					0.4	
	CCGW09T308-2N S0202020		●	●	●	●	CCGW3(2.5)2-2N S0202020					0.8	

## DC 55° PCBN Negative Inserts



Sharp Cutting Edge	Standard Cutting Edge	Strong Cutting Edge
S0101505	S0102510	S0202020

Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	DCGW070204-1N S0101505	SLWG22C2	●	●	●	●	DCGW2(1.5)1-1N S0101505	SLWG22C2	6.35	2.8	2.38	0.2	2.2
	DCGW070204-1N S0102510		●	●	●	●	DCGW2(1.5)1-1N S2102510					0.4	
	DCGW070204-1N S0202020		●	●	●	●	DCGW2(1.5)1-1N S0202020					0.8	
	DCGW070208-2N S0101505		●	●	●	●	DCGW2(1.5)2-2N S0101505					0.2	
	DCGW070208-2N S0102510		●	●	●	●	DCGW2(1.5)2-2N S0102510					0.4	
	DCGW070208-2N S0202020		●	●	●	●	DCGW2(1.5)2-2N S0202020					0.8	

## DC 55° PCBN Negative Inserts



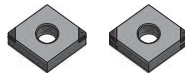
Sharp Cutting Edge	Standard Cutting Edge	Strong Cutting Edge
S0101505	S0102510	S0202020

Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	DCGW11T304-1N S0101505	SLWG22C2	●	●	●	●	DCGW3(2.5)1-1N S0101505	SLWG22C2	6.35	2.8	3.97	0.2	2.2
	DCGW11T304-1N S0102510		●	●	●	●	DCGW3(2.5)1-1N S2102510					0.4	
	DCGW11T304-1N S0202020		●	●	●	●	DCGW3(2.5)1-1N S0202020					0.8	
	DCGW11T308-2N S0101505		●	●	●	●	DCGW3(2.5)2-2N S0101505					0.2	
	DCGW11T308-2N S0102510		●	●	●	●	DCGW3(2.5)2-2N S0102510					0.4	
	DCGW11T308-2N S0202020		●	●	●	●	DCGW3(2.5)2-2N S0202020					0.8	

Examples: ISO: DCGW11T304-2N S0101505 SLWG22C2 PNH1020  
 ANSI: DCGW3(2.5)1-2N S0101505 SLWG22C2 PNH1020

# Specifications of Coated PCBN Wiper Insert

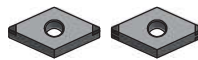
## CN 80° PCBN Negative Inserts



Sharp Cutting Edge	Standard Cutting Edge	Strong Cutting Edge
S0101505	S0102510	S0202020

Shape	ISO	Tip Shape	H			ANSI	Tip Shape	Dimensions in mm					
			PNH0120	PNH1020	PNH2018			PNH3019	ic	∅d	s	r	la
	CNGA120404-2N S0101505	SLWG22C2	●	●	●	●	CNGA431-2N S0101505	SLWG22C2	12.7	5.16	4.76	0.4	2.2
	CNGA120404-2N S0102510		●	●	●	●	CNGA431-2N S0102510					0.4	
	CNGA120404-2N S0202020		●	●	●	●	CNGA431-2N S0202020					0.4	
	CNGA120408-2N S0101505		●	●	●	●	CNGA432-2N S0101505					0.8	
	CNGA120408-2N S0102510		●	●	●	●	CNGA432-2N S0102510					0.8	
	CNGA120408-2N S0202020		●	●	●	●	CNGA432-2N S0202020					0.8	
	CNGA120404-4N S0101505		●	●	●	●	CNGA431-4N S0101505		0.4				
	CNGA120404-4N S0102510		●	●	●	●	CNGA431-4N S0102510		0.4				
	CNGA120404-4N S0202020		●	●	●	●	CNGA431-4N S0202020		0.4				
	CNGA120408-4N S0101505		●	●	●	●	CNGA432-4N S0101505		0.8				
	CNGA120408-4N S0102510		●	●	●	●	CNGA432-4N S0102510		0.8				
	CNGA120408-4N S0202020		●	●	●	●	CNGA432-4N S0202020		0.8				

## DN 55° PCBN Negative Inserts



Sharp Cutting Edge	Standard Cutting Edge	Strong Cutting Edge
S0101505	S0102510	S0202020

Shape	ISO	Tip Shape	H			ANSI	Tip Shape	Dimensions in mm					
			PNH0120	PNH1020	PNH2018			PNH3019	ic	∅d	s	r	la
	DNGA150404-2N S0101505	SLWG22C2	●	●	●	●	DNGA431-2N S0101505	SLWG22C2	12.7	5.16	4.76	0.4	2.2
	DNGA150404-2N S0102510		●	●	●	●	DNGA431-2N S0102510					0.4	
	DNGA150404-2N S0202020		●	●	●	●	DNGA431-2N S0202020					0.4	
	DNGA150408-2N S0101505		●	●	●	●	DNGA432-2N S0101505					0.8	
	DNGA150408-2N S0102510		●	●	●	●	DNGA432-2N S0102510					0.8	
	DNGA150408-2N S0202020		●	●	●	●	DNGA432-2N S0202020					0.8	
	DNGA150404-4N S0101505		●	●	●	●	DNGA431-4N S0101505		0.4				
	DNGA150404-4N S0102510		●	●	●	●	DNGA431-4N S0102510		0.4				
	DNGA150404-4N S0202020		●	●	●	●	DNGA431-4N S0202020		0.4				
	DNGA150408-4N S0101505		●	●	●	●	DNGA432-4N S0101505		0.8				
	DNGA150408-4N S0102510		●	●	●	●	DNGA432-4N S0102510		0.8				
	DNGA150408-4N S0202020		●	●	●	●	DNGA432-4N S0202020		0.8				

Examples: ISO: DNGA150408-2N S0101505SLWG22C2 PNH1020  
ANSI: DNGA432-2N S0101505SLWG22C2 PNH1020

# Specifications of Coated PCBN Wiper Insert

**TN**

60° PCBN Negative Inserts



Sharp Cutting Edge	Standard Cutting Edge	Strong Cutting Edge
S0101505	S0102510	S0202020

Shape	ISO	Tip Shape	H			ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH3019			ic	Ød	s	r	la
	TNGA160404-3N S0101505	SLWG22C2	●	●	●	TNGA331-3N S0101505	SLWG22C2	9.525	3.81	4.76	0.4	2.2
	TNGA160404-3N S0102510		●	●	●	TNGA331-3N S0102510					0.4	
	TNGA160404-3N S0202020		●	●	●	TNGA331-3N S0202020					0.4	
	TNGA160408-3N S0101505		●	●	●	TNGA332-3N S0101505					0.8	
	TNGA160408-3N S0102510		●	●	●	TNGA332-3N S0102510					0.8	
	TNGA160408-3N S0202020		●	●	●	TNGA332-3N S0202020					0.8	
	TNGA160404-6N S0101505		●	●	●	TNGA331-6N S0101505		0.4				
	TNGA160404-6N S0102510		●	●	●	TNGA331-6N S0102510		0.4				
	TNGA160404-6N S0202020		●	●	●	TNGA331-6N S0202020		0.4				
	TNGA160408-6N S0101505		●	●	●	TNGA332-6N S0101505		0.8				
	TNGA160408-6N S0102510		●	●	●	TNGA332-6N S0102510		0.8				
	TNGA160408-6N S0202020		●	●	●	TNGA332-6N S0202020		0.8				

**WN**

80° PCBN Negative Inserts



Sharp Cutting Edge	Standard Cutting Edge	Strong Cutting Edge
S0101505	S0102510	S0202020

Shape	ISO	Tip Shape	H			ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH3019			ic	Ød	s	r	la
	WNGA080404-3N S0101505	SLWG22C2	●	●	●	WNGA431-3N S0101505	SLWG22C2	12.7	5.16	4.76	0.4	2.2
	WNGA080404-3N S0102510		●	●	●	WNGA431-3N S0102510					0.4	
	WNGA080404-3N S0202020		●	●	●	WNGA431-3N S0202020					0.4	
	WNGA080408-3N S0101505		●	●	●	WNGA432-3N S0101505					0.8	
	WNGA080408-3N S0102510		●	●	●	WNGA432-3N S0102510					0.8	
	WNGA080408-3N S0202020		●	●	●	WNGA432-3N S0202020					0.8	
	WNGA080404-6N S0101505		●	●	●	WNGA431-6N S0101505		0.4				
	WNGA080404-6N S0102510		●	●	●	WNGA431-6N S0102510		0.4				
	WNGA080404-6N S0202020		●	●	●	WNGA431-6N S0202020		0.4				
	WNGA080408-6N S0101505		●	●	●	WNGA432-6N S0101505		0.8				
	WNGA080408-6N S0102510		●	●	●	WNGA432-6N S0102510		0.8				
	WNGA080408-6N S0202020		●	●	●	WNGA432-6N S0202020		0.8				

Examples: ISO: TNGA160408-6N S0101505SLWG22C2 PNH1020  
ANSI: TNGA332-6N S0101505SLWG22C2 PNH1020

# Specifications of Coated PCBN Insert

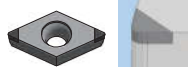
## CC 80° PCBN Negative Inserts



Sharp Cutting Edge	Standard Cutting Edge	Strong Cutting Edge
S0101505	S0102510	S0202020

Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	CCGW09T304-1N S0101505	SLST22C2	●	●	●	●	CCGW3(2.5)1-1N S0101505	SLST22C2	9.525	4.4	3.97	0.2	2.2
	CCGW09T304-1N S0102510		●	●	●	●	CCGW3(2.5)1-1N S0102510					0.4	
	CCGW09T304-1N S0202020		●	●	●	●	CCGW3(2.5)1-1N S0202020					0.8	
	CCGW09T308-2N S0101505		●	●	●	●	CCGW3(2.5)2-2N S0101505					0.2	
	CCGW09T308-2N S0102510		●	●	●	●	CCGW3(2.5)2-2N S0102510					0.4	
	CCGW09T308-2N S0202020		●	●	●	●	CCGW3(2.5)2-2N S0202020					0.8	

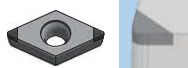
## DC 55° PCBN Negative Inserts



Sharp Cutting Edge	Standard Cutting Edge	Strong Cutting Edge
S0101505	S0102510	S0202020

Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	DCGW070204-1N S0101505	SLST22C2	●	●	●	●	DCGW2(1.5)1-1N S0101505	SLST22C2	6.35	2.8	2.38	0.2	2.2
	DCGW070204-1N S0102510		●	●	●	●	DCGW2(1.5)1-1N S2102510					0.4	
	DCGW070204-1N S0202020		●	●	●	●	DCGW2(1.5)1-1N S0202020					0.8	
	DCGW070208-2N S0101505		●	●	●	●	DCGW2(1.5)2-2N S0101505					0.2	
	DCGW070208-2N S0102510		●	●	●	●	DCGW2(1.5)2-2N S0102510					0.4	
	DCGW070208-2N S0202020		●	●	●	●	DCGW2(1.5)2-2N S0202020					0.8	

## DC 55° PCBN Negative Inserts



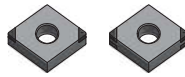
Sharp Cutting Edge	Standard Cutting Edge	Strong Cutting Edge
S0101505	S0102510	S0202020

Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	DCGW11T304-1N S0101505	SLST22C2	●	●	●	●	DCGW3(2.5)1-1N S0101505	SLST22C2	6.35	2.8	3.97	0.2	2.2
	DCGW11T304-1N S0102510		●	●	●	●	DCGW3(2.5)1-1N S2102510					0.4	
	DCGW11T304-1N S0202020		●	●	●	●	DCGW3(2.5)1-1N S0202020					0.8	
	DCGW11T308-2N S0101505		●	●	●	●	DCGW3(2.5)2-2N S0101505					0.2	
	DCGW11T308-2N S0102510		●	●	●	●	DCGW3(2.5)2-2N S0102510					0.4	
	DCGW11T308-2N S0202020		●	●	●	●	DCGW3(2.5)2-2N S0202020					0.8	

Examples: ISO: DCGW11T304-2N S0101505 SLST22C2 PNH1020  
 ANSI: DCGW3(2.5)1-2N S0101505 SLST22C2 PNH1020

# Specifications of Coated PCBN Insert

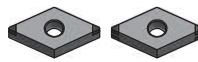
## CN 80° PCBN Negative Inserts



Sharp Cutting Edge	Standard Cutting Edge	Strong Cutting Edge
S0101505	S0102510	S0202020

Shape	ISO	Tip Shape	H			ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH3019			ic	∅d	s	r	la
	CNGA120404-2N S0101505	SLST22C2	●	●	●	CNGA431-2N S0101505	SLST22C2	12.7	5.16	4.76	0.4	2.2
	CNGA120404-2N S0102510		●	●	●	CNGA431-2N S0102510					0.4	
	CNGA120404-2N S0202020		●	●	●	CNGA431-2N S0202020					0.4	
	CNGA120408-2N S0101505		●	●	●	CNGA432-2N S0101505					0.8	
	CNGA120408-2N S0102510		●	●	●	CNGA432-2N S0102510					0.8	
	CNGA120408-2N S0202020		●	●	●	CNGA432-2N S0202020					0.8	
	CNGA120404-4N S0101505		●	●	●	CNGA431-4N S0101505		0.4				
	CNGA120404-4N S0102510		●	●	●	CNGA431-4N S0102510		0.4				
	CNGA120404-4N S0202020		●	●	●	CNGA431-4N S0202020		0.4				
	CNGA120408-4N S0101505		●	●	●	CNGA432-4N S0101505		0.8				
	CNGA120408-4N S0102510		●	●	●	CNGA432-4N S0102510		0.8				
	CNGA120408-4N S0202020		●	●	●	CNGA432-4N S0202020		0.8				

## DN 55° PCBN Negative Inserts



Sharp Cutting Edge	Standard Cutting Edge	Strong Cutting Edge
S0101505	S0102510	S0202020

Shape	ISO	Tip Shape	H			ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH3019			ic	∅d	s	r	la
	DNGA150404-2N S0101505	SLST22C2	●	●	●	DNGA431-2N S0101505	SLST22C2	12.7	5.16	4.76	0.4	2.2
	DNGA150404-2N S0102510		●	●	●	DNGA431-2N S0102510					0.4	
	DNGA150404-2N S0202020		●	●	●	DNGA431-2N S0202020					0.4	
	DNGA150408-2N S0101505		●	●	●	DNGA432-2N S0101505					0.8	
	DNGA150408-2N S0102510		●	●	●	DNGA432-2N S0102510					0.8	
	DNGA150408-2N S0202020		●	●	●	DNGA432-2N S0202020					0.8	
	DNGA150404-4N S0101505		●	●	●	DNGA431-4N S0101505		0.4				
	DNGA150404-4N S0102510		●	●	●	DNGA431-4N S0102510		0.4				
	DNGA150404-4N S0202020		●	●	●	DNGA431-4N S0202020		0.4				
	DNGA150408-4N S0101505		●	●	●	DNGA432-4N S0101505		0.8				
	DNGA150408-4N S0102510		●	●	●	DNGA432-4N S0102510		0.8				
	DNGA150408-4N S0202020		●	●	●	DNGA432-4N S0202020		0.8				

Examples: ISO: DNGA150408-2N S0101505 SLST22C2 PNH1020  
 ANSI: DNGA432-2N S0101505 SLST22C2 PNH1020



# Specifications of Coated PCBN Insert

## TN 60° PCBN Negative Inserts



Sharp Cutting Edge	Standard Cutting Edge	Strong Cutting Edge
S0101505	S0102510	S0202020

Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	TNGA160404-3N S0101505	SLST22C2	●	●	●	●	TNGA331-3N S0101505	SLST22C2	9.525	3.81	4.76	0.4	2.2
	TNGA160404-3N S0102510		●	●	●	●	TNGA331-3N S0102510					0.4	
	TNGA160404-3N S0202020		●	●	●	●	TNGA331-3N S0202020					0.4	
	TNGA160408-3N S0101505		●	●	●	●	TNGA332-3N S0101505					0.8	
	TNGA160408-3N S0102510		●	●	●	●	TNGA332-3N S0102510					0.8	
	TNGA160408-3N S0202020		●	●	●	●	TNGA332-3N S0202020					0.8	
TNGA160404-6N S0101505	●		●	●	●	TNGA331-6N S0101505	0.4						
TNGA160404-6N S0102510	●		●	●	●	TNGA331-6N S0102510	0.4						
TNGA160404-6N S0202020	●		●	●	●	TNGA331-6N S0202020	0.4						
TNGA160408-6N S0101505	●		●	●	●	TNGA332-6N S0101505	0.8						
TNGA160408-6N S0102510	●		●	●	●	TNGA332-6N S0102510	0.8						
TNGA160408-6N S0202020	●		●	●	●	TNGA332-6N S0202020	0.8						

## WN 80° PCBN Negative Inserts



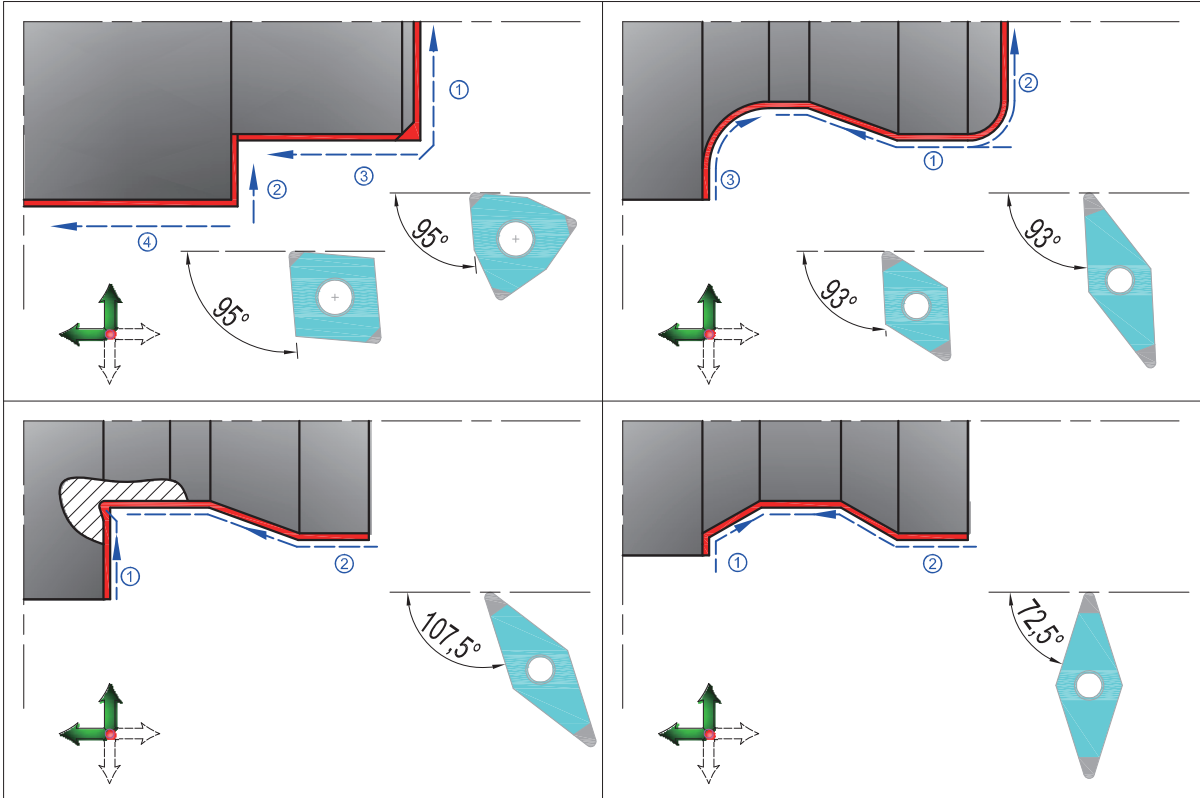
Sharp Cutting Edge	Standard Cutting Edge	Strong Cutting Edge
S0101505	S0102510	S0202020

Shape	ISO	Tip Shape	H				ANSI	Tip Shape	Dimensions in mm				
			PNH0120	PNH1020	PNH2018	PNH3019			ic	∅d	s	r	la
	WNGA080404-3N S0101505	SLWG22C2	●	●	●	●	WNGA431-3N S0101505	SLST22C2	12.7	5.16	4.76	0.4	2.2
	WNGA080404-3N S0102510		●	●	●	●	WNGA431-3N S0102510					0.4	
	WNGA080404-3N S0202020		●	●	●	●	WNGA431-3N S0202020					0.4	
	WNGA080408-3N S0101505		●	●	●	●	WNGA432-3N S0101505					0.8	
	WNGA080408-3N S0102510		●	●	●	●	WNGA432-3N S0102510					0.8	
	WNGA080408-3N S0202020		●	●	●	●	WNGA432-3N S0202020					0.8	
WNGA080404-6N S0101505	●		●	●	●	WNGA431-6N S0101505	0.4						
WNGA080404-6N S0102510	●		●	●	●	WNGA431-6N S0102510	0.4						
WNGA080404-6N S0202020	●		●	●	●	WNGA431-6N S0202020	0.4						
WNGA080408-6N S0101505	●		●	●	●	WNGA432-6N S0101505	0.8						
WNGA080408-6N S0102510	●		●	●	●	WNGA432-6N S0102510	0.8						
WNGA080408-6N S0202020	●		●	●	●	WNGA432-6N S0202020	0.8						

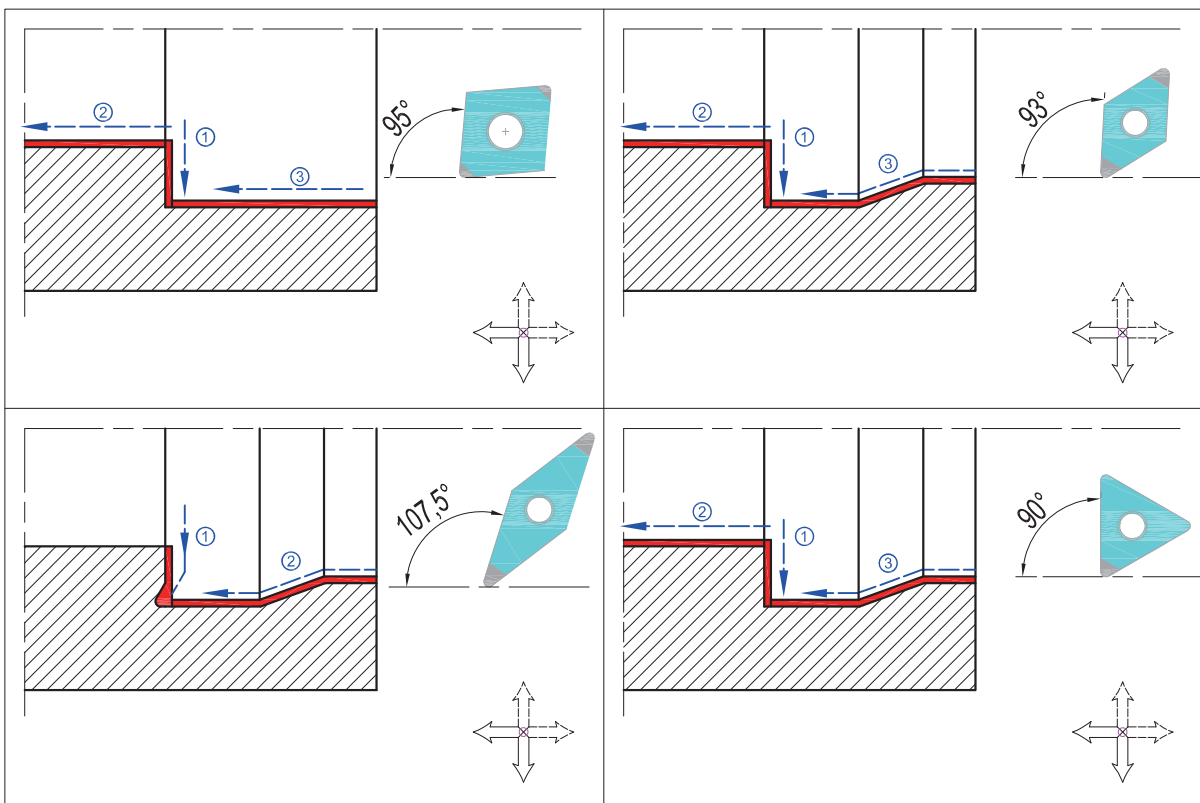
Examples: ISO: TNGA160408-6N S0101505 SLST22C2 PNH1020  
ANSI: TNGA332-6N S0101505 SLST22C2 PNH1020

# Cutting Direction Recommendation

## External machining



## Internal machining



# Nose radius, Feed Rate Against Surface Finish Spindle Speed Recommendation

## ■ Influence of nose radius and feed rate on the surface finish.

The table below gives recommended maximum feed rates to achieve a special Ra. Value.

$$h = r\epsilon - (r\epsilon^2 - (0.5 \times f)^2) 0.5$$

$$f_{\max} = (Ra \times r\epsilon / 50) \frac{1}{2}$$

Nose radius (mm)	Surface finish Ra value(μm)					
	0.2	0.4	0.8	1.6	3.2	6.4
	feed (mm/rev) rate ≅					
0.2	0.028	0.040	0.057	0.080	0.113	0.160
0.4	0.040	0.057	0.080	0.113	0.160	0.226
0.8	0.057	0.080	0.113	0.160	0.226	0.320
1.2	0.069	0.098	0.139	0.196	0.277	0.392
1.6	0.080	0.113	0.160	0.226	0.320	0.453
2.4	0.098	0.139	0.196	0.277	0.392	0.554

## ■ Spindle speed recommendation

Speed (m/min)	Workpiece/Tool Holer Diameter (mm)													
	12	16	20	25	32	50	63	80	100	125	160	175	200	250
80	2123	1592	1274	1019	796	510	404	318	255	204	159	146	127	102
90	2389	1791	1433	1146	896	573	455	358	287	229	179	164	143	115
100	2654	1990	1592	1274	995	637	506	398	318	255	199	182	159	127
110	2919	2189	1752	1401	1095	701	556	438	350	280	219	200	175	140
120	3185	2389	1911	1529	1194	764	607	478	382	306	239	218	191	153
140	3715	2787	2229	1783	1393	892	708	557	446	357	279	255	223	178
160	4246	3185	2548	2038	1592	1019	809	637	510	408	318	291	255	204
180	4777	3583	2866	2293	1791	1146	910	717	573	459	358	328	287	229
200	5308	3981	3185	2548	1990	1274	1011	796	637	510	398	364	318	255
220	5839	4379	3503	2803	2189	1401	1112	876	701	561	438	400	350	280
240	6369	4777	3822	3057	2389	1529	1213	955	764	611	478	437	382	306
260	6900	5175	4140	3312	2588	1656	1314	1035	828	662	518	473	414	331
280	7431	5573	4459	3567	2787	1783	1415	1115	892	713	557	510	446	357
300		5971	4777	3822	2986	1911	1517	1194	955	764	597	546	478	382
400						2548	2022	1592	1274	1019	796	728	637	510
600						3822	3033	2389	1911	1529	1194	1092	955	764
800						5096	4044	3185	2548	2038	1592	1456	1274	1019
1000						6369	5055	3981	3185	2548	1990	1820	1592	1274



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