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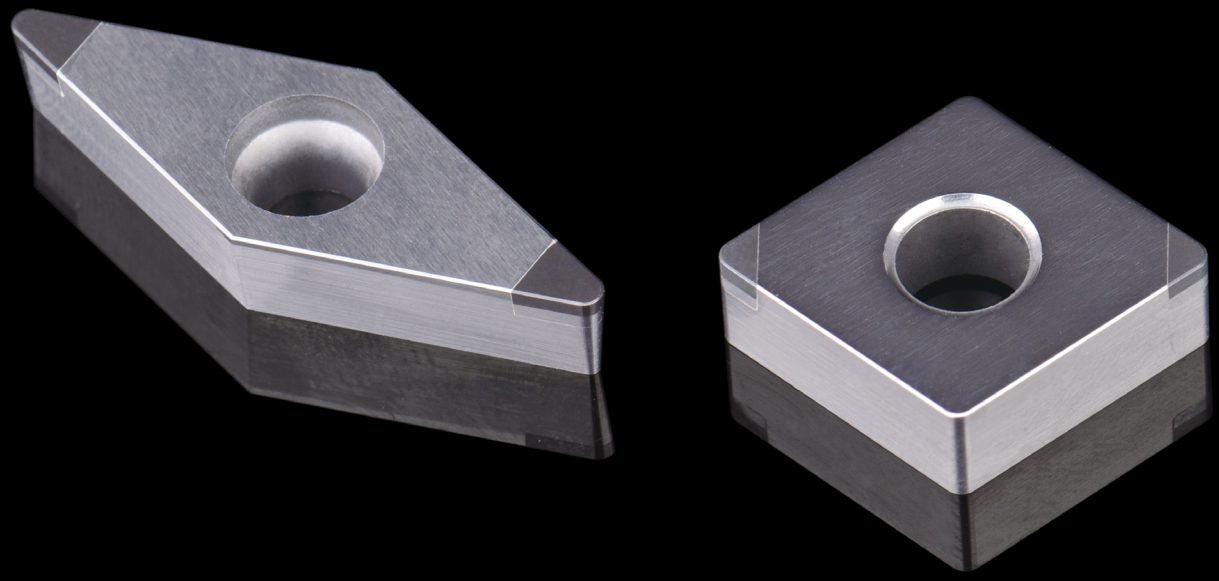
THE EXPERT OF DIFFICULT MACHINING



PCBN/PCD Inserts

PCBN/PCD

CUTTING TOOL CATALOGUE

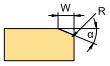
PCBN Insert Denomination System

CNGA 120408	-	S	010	20	-	SL	-	2	-	CB	PB30
1		2	3	4		5		6		7	8

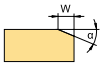
1- Standard ISO Code System

2- Cutting Edge Shape

S-- Land + Honed



T-- Land



3- T-land Width

005--0.05mm
010--0.10mm
015--0.15mm
020--0.20mm

4- T-land Angle

10--10°
15--15°
20--20°
25--25°

5- CBN Insert Structure

FT-- Full-face composite

SD-- Solid CBN

SL-- Standard

QL-- Heavy-duty through-cut

6- Number Of Cutting Edges

2-- Two cutting edges
3-- Three cutting edges

7- Cutting Edge Preparation

CB-- With chip breaker
WG-- With wiper edge
"None"-- Without chip breaker

8- Grade

PB30-- Low content CBN
PB60-- Medium content CBN
PB90-- High content CBN

PCBN Insert Grade Introduction

Grade	Grade Characteristics	Main Applications	ISO Group
PB30	Excellent wear resistance for medium-to-high-speed machining	Versatile; suitable for continuous and light interrupted cutting of hardened steel	H05-H15
PB60	Balanced toughness for medium cutting speeds	Moderate-interrupted cutting of hardened steel, interrupted and continuous machining of powder metallurgy, gray cast iron machining	H10-H25
PB90	High CBN content with superior hardness & fracture resistance	K- Mainly for cast iron machining H- Severe interrupted cutting of hardened steel, powder metallurgy machining	K01-K20

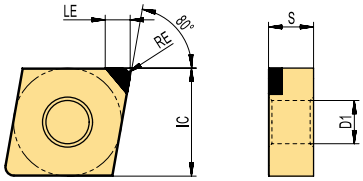
Recommended Parameters for PCBN Insert

Grade	Workpiece Material	Hardness Range	Cutting Speed Vc (m/min)	Feed fn (mm/rev)	Depth of Cut ap (mm)	Recommended Application Conditions
PB30	Hardened steel	HRC58-62	150--250	0.03--0.2	0.05-0.3	Continuous
PB60	Hardened steel	HRC55-60	50--150	0.03--0.2	0.05-0.5	Interrupted
	Cast iron	HB180-220	150--450	0.03--0.3	0.30-0.5	Continuous/Interrupted
	Powder metallurgy	-	200--500	0.03--0.3	0.10-0.3	Continuous/Interrupted
PB90	Hardened steel	HRC55-60	30--120	0.03--0.2	0.05-0.5	Heavy interrupted
	Cast iron	HB180-220	150--450	0.03--0.3	0.30-0.5	Continuous/Interrupted
	Powder metallurgy	-	300--800	0.03--0.3	0.10-0.3	Continuous/Interrupted

Grade Application Guide

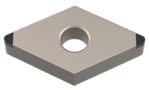
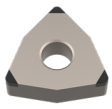
Material Group		ISO	ISO Group of PCBN Insert Grade			ISO
			Uncoated			
			PB30	PB60	PB90	
P	Non-alloy steels/ Alloyed steels	P01				P01
		P10				P10
		P20				P20
		P30				P30
		P40				P40
		P50				P50
M	Stainless steels	M01				M01
		M10				M10
		M20				M20
		M30				M30
		M40				M40
K	Cast iron	K01			PB90	K01
		K10				K10
		K20				K20
		K30				K30
		K40				K40
		K50				K50
N	Aluminum/ Aluminum alloys	N01				N01
		N10				N10
		N20				N20
		N30				N30
S	Heat resistant alloys	S01				S01
		S10				S10
		S20				S20
		S30				S30
		S40				S40
H	Hardened steels/ Chilled cast iron	H01	PB30			H01
		H10		PB60		H10
		H20				H20
		H30				H30

Overview of PCBN Negative Inserts



(mm)

Product code	IC	S	LE	D1
CN_1204_	12.7	4.76	2.2	5.16
DN_1504_	12.7	4.76	2.2	5.16
DN_1506_	12.7	6.35	2.2	5.16
TN_1604_	9.525	4.76	2.2	3.81
VN_1604_	9.525	4.76	2.2	3.81
WN_0804_	12.7	4.76	2.2	5.16

Inserts	Product code	RE (mm)	Machining conditions: Recommanded parameters f (mm/rev)	ap (mm)	● Good Conditions ◐ General Conditions ✱ Bad Conditions: ●	◐	●
					H		K
					PB30	PB60	PB90
	**CNGA 120404-S01020-SL-2**	0.4	0.03-0.3	0.05-0.5	●	●	●
	120408-S01020-SL-2	0.8	0.03-0.3	0.05-0.5	●	●	●
	120412-S01020-SL-2	1.2	0.03-0.3	0.05-0.5			●
	**DNGA 150404-S01020-SL-2**	0.4	0.03-0.3	0.05-0.5	●	●	●
	150408-S01020-SL-2	0.8	0.03-0.3	0.05-0.5	●	●	●
	150412-S01020-SL-2	1.2	0.03-0.3	0.05-0.5			●
	150604-S01020-SL-2	0.4	0.03-0.3	0.05-0.5	●	●	●
	150608-S01020-SL-2	0.8	0.03-0.3	0.05-0.5	●	●	●
	150612-S01020-SL-2	1.2	0.03-0.3	0.05-0.5			●
	**TNGA 160404-S01020-SL-3**	0.4	0.03-0.3	0.05-0.5	●	●	●
	160408-S01020-SL-3	0.8	0.03-0.3	0.05-0.5	●	●	●
	160412-S01020-SL-3	1.2	0.03-0.3	0.05-0.5			●
	**VNGA 160404-S01020-SL-2**	0.4	0.03-0.3	0.05-0.5	●	●	●
	160408-S01020-SL-2	0.8	0.03-0.3	0.05-0.5	●	●	●
	160412-S01020-SL-2	1.2	0.03-0.3	0.05-0.5			●
	**WNGA 080404-S01020-SL-3**	0.4	0.03-0.3	0.05-0.5	●	●	●
	080408-S01020-SL-3	0.8	0.03-0.3	0.05-0.5	●	●	●
	080412-S01020-SL-3	1.2	0.03-0.3	0.05-0.5			●

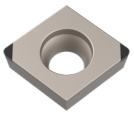
For hard material turning, negative PCBN Inserts are preferred to use double-clamped D-type tool holders to reduce vibration and chipping.

● : Standard stock ○ : Made-to-Order

Overview of PCBN Positive Inserts

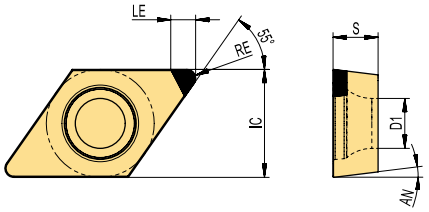
(mm)

Product code	IC	S	LE	D1	AN
CC_0602_	6.35	2.38	2.2	2.8	7°
CC_09T3_	9.525	3.97	2.2	4.4	7°
CC_1204_	12.7	4.76	2.2	5.5	7°
TC_1102_	6.35	2.38	2.2	2.8	7°
TP_0802_	4.76	2.38	2.2	2.3	11°
TP_0902_	5.56	2.38	2.2	2.8	11°
TP_1103_	6.35	3.18	2.2	3.4	11°
TP_1604_	9.525	3.18	2.2	4.4	11°

Inserts	Product code	RE (mm)	Machining conditions: Recommanded parameters f (mm/rev)	ap (mm)	● Good Conditions ⬮ General Conditions ✱ Bad Conditions: ●	⬮	●
					H		K
					PB30	PB60	PB90
	**CCGW 060202-S01020-SL-2**	0.2	0.03-0.3	0.05-0.5	●	●	
	060204-S01020-SL-2	0.4	0.03-0.3	0.05-0.5	●	●	●
	09T302-S01020-SL-2	0.2	0.03-0.3	0.05-0.5	●		
	09T304-S01020-SL-2	0.4	0.03-0.3	0.05-0.5	●	●	●
	09T308-S01020-SL-2	0.8	0.03-0.3	0.05-0.5	●	●	●
	120404-S01020-SL-2	0.4	0.03-0.3	0.05-0.5	●	●	●
	120408-S01020-SL-2	0.8	0.03-0.3	0.05-0.5	●	●	●
	120412-S01020-SL-2	1.2	0.03-0.3	0.05-0.5			●
	**TPGW 080202-S01020-SL-3**	0.2	0.03-0.3	0.05-0.5	●	●	
	080204-S01020-SL-3	0.4	0.03-0.3	0.05-0.5	●	●	●
	090202-S01020-SL-3	0.2	0.03-0.3	0.05-0.5	●	●	
	090204-S01020-SL-3	0.4	0.03-0.3	0.05-0.5	●	●	●
	090208-S01020-SL-3	0.8	0.03-0.3	0.05-0.5	●	●	●
	110302-S01020-SL-3	0.2	0.03-0.3	0.05-0.5	●	●	
	110304-S01020-SL-3	0.4	0.03-0.3	0.05-0.5	●	●	●
	160402-S01020-SL-3	0.2	0.03-0.3	0.05-0.5	●	●	
	160404-S01020-SL-3	0.4	0.03-0.3	0.05-0.5	●	●	●
	160408-S01020-SL-3	0.8	0.03-0.3	0.05-0.5	●	●	●
	TCGW 110204-S01020-SL-3	0.4	0.03-0.3	0.05-0.5	●	●	●
	110208-S01020-SL-3	0.8	0.03-0.3	0.05-0.5	●	●	●

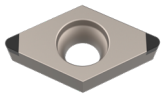
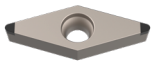
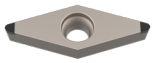
● : Standard stock ○ : Made-to-Order

Overview of PCBN Positive Inserts



(mm)

Product code	IC	S	LE	D1	AN
DC_0702_	6.35	2.38	2.2	2.8	7°
DC_11T3_	9.525	3.97	2.2	4.4	7°
VB_1103_	6.35	3.18	2.2	2.8	5°
VC_1103_	6.35	3.18	2.2	2.8	7°
VB_1604_	9.525	4.76	2.2	4.4	5°
VC_1604_	9.525	4.76	2.2	4.4	7°

Inserts	Product code	RE (mm)	Machining conditions: Recommanded parameters f (mm/rev)	ap (mm)	● Good Conditions ⬌ General Conditions ✱ Bad Conditions: H PB30	H PB60	K PB90
					●	⬌	●
	**DCGW 070202-S01020-SL-2**	0.2	0.03-0.3	0.05-0.5	●		
	070204-S01020-SL-2	0.4	0.03-0.3	0.05-0.5	●	●	●
	070208-S01020-SL-2	0.8	0.03-0.3	0.05-0.5	●	●	●
	11T302-S01020-SL-2	0.2	0.03-0.3	0.05-0.5	●		
	11T304-S01020-SL-2	0.4	0.03-0.3	0.05-0.5	●	●	●
	11T308-S01020-SL-2	0.8	0.03-0.3	0.05-0.5	●	●	●
	11T312-S01020-SL-2	1.2	0.03-0.3	0.05-0.5		●	●
	**VBGW 110302-S01020-SL-2**	0.2	0.03-0.3	0.05-0.5	●		
	110304-S01020-SL-2	0.4	0.03-0.3	0.05-0.5	●	●	●
	110308-S01020-SL-2	0.8	0.03-0.3	0.05-0.5	●	●	●
	160402-S01020-SL-2	0.2	0.03-0.3	0.05-0.5	●		
	160404-S01020-SL-2	0.4	0.03-0.3	0.05-0.5	●	●	●
	160408-S01020-SL-2	0.8	0.03-0.3	0.05-0.5	●	●	●
	**VCGW 110302-S01020-SL-2**	0.2	0.03-0.3	0.05-0.5	●		
	110304-S01020-SL-2	0.4	0.03-0.3	0.05-0.5	●	●	●
	110308-S01020-SL-2	0.8	0.03-0.3	0.05-0.5	●	●	●
	160402-S01020-SL-2	0.2	0.03-0.3	0.05-0.5	●		
	160404-S01020-SL-2	0.4	0.03-0.3	0.05-0.5	●	●	●
	160408-S01020-SL-2	0.8	0.03-0.3	0.05-0.5	●	●	●

● : Standard stock ○ : Made-to-Order

PCD Insert Denomination System

CCGW 09T304	-	1	-	NL	-	05	-	CB	PD20
1		2		3		4		5	6

1- Standard ISO Code System

2- Number Of Cutting Edges

1-- One cutting edge

3- PCD Insert Structure

NL--Standard

LL--Full edge tippde

4- Rake Angle

00--0°　　07--7°
05--5°　　10--10°

5- Cutting Edge Preparation

CB-- With chip breaker
WG-- With wiper edge
“ - ” -- Without chip breaker

6- Grade

PD01-- Fine grain PCD
PD10-- Medium grain PCD
PD20-- Mixed grain PCD

PCD Insert Grade Introduction

Grade	Grade Characteristics	Main Applications	ISO Group
PD20	2-30μm mixed grain size; superior wear resistance & edge integrity; excellent surface finish	1st choice for general aluminum machining, roughing of high-silicon Al, graphite, carbide rolls	N01-N20
PD10	10μm avg. grain size; balanced toughness & wear resistance; premium finish	Single-workpiece roughing/finishing; medium/low-silicon aluminum	N01-N20

PCD Recommended Cutting Parameter

Grade	Workpiece Material	Cutting Speed Vc (m/min)	Feed fn (mm/rev)	Depth of Cut ap (mm)
PD20	Low-Si Al (si ≤ 12%)	600-2000	0.03-0.3	0.05-0.5
	High-Si Al (si > 12%)	300-500	0.03-0.2	0.05-0.2
	Copper alloys	400-1000	0.1-0.3	0.1-2
	Sintered carbides	20-40	0.03-0.2	0.05-0.2
	CFRP/graphite	100-600	0.1-0.3	0.1-2

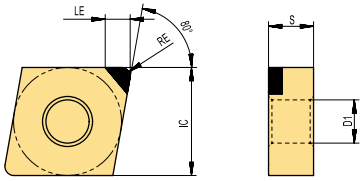
Grade Application Guide

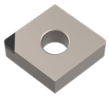
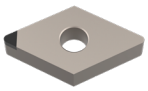
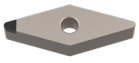
Material Group		ISO	ISO Group of PCD Insert Grade Uncoated PD20	ISO
P	Non-alloy steels/ Alloyed steels	P01		P01
		P10		P10
		P20		P20
		P30		P30
		P40		P40
		P50		P50
M	Stainless steels	M01		M01
		M10		M10
		M20		M20
		M30		M30
		M40		M40
K	Cast iron	K01		K01
		K10		K10
		K20		K20
		K30		K30
		K40		K40
		K50		K50
N	Aluminum/ Aluminum alloys	N01	PD20	N01
		N10		N10
		N20		N20
		N30		N30
S	Heat resistant alloys	S01		S01
		S10		S10
		S20		S20
		S30		S30
		S40		S40
H	Hardened steels/ Chilled cast iron	H01		H01
		H10		H10
		H20		H20
		H30		H30

Overview of PCD Negative Inserts

(mm)

Product code	IC	S	LE	D1
CN_1204_	12.7	4.76	3.0	5.16
DN_1504_	12.7	4.76	3.0	5.16
TN_1604_	9.525	4.76	3.0	3.81
VN_1604_	9.525	4.76	3.0	3.81



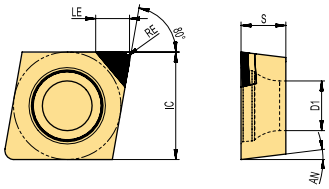
Inserts	Product code	RE (mm)	Machining conditions: Recommanded parameters f (mm/rev)	Machining conditions: Recommanded parameters ap (mm)	● Good Conditions: N: PD20
	**CNGA 120404-1-NL-00**	0.4	0.03-0.2	0.05-0.5	●
	120408-1-NL-00	0.8	0.03-0.2	0.05-0.5	●
	**DNGA 150404-1-NL-00**	0.4	0.03-0.2	0.05-0.5	●
	150408-1-NL-00	0.8	0.03-0.2	0.05-0.5	●
	**TNGA 160404-1-NL-00**	0.4	0.03-0.2	0.05-0.5	●
	160408-1-NL-00	0.8	0.03-0.2	0.05-0.5	●
	**VNGA 160404-1-NL-00**	0.4	0.03-0.2	0.05-0.5	●
	160408-1-NL-00	0.8	0.03-0.2	0.05-0.5	●

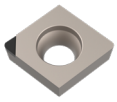
● : Standard stock ○ : Made-to-Order

Overview of PCD Positive Inserts

(mm)

Product code	IC	S	LE	D1	AN
CC_0602_	6.35	2.38	3.0	2.8	7°
CC_09T3_	9.525	3.97	3.0	4.4	7°
CC_1204_	12.7	4.76	3.0	5.5	7°



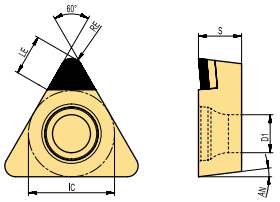
Inserts	Product code	RE (mm)	Rake Angle (°)	Machining conditions: Recommanded parameters f (mm/rev)	Machining conditions: Recommanded parameters ap (mm)	● Good Conditions: N: PD20
	**CCGW 060202-1-NL-05**	0.2	5°	0.03-0.2	0.05-0.5	●
	060204-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●
	09T302-1-NL-05	0.2	5°	0.03-0.2	0.05-0.5	●
	09T304-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●
	09T308-1-NL-05	0.8	5°	0.03-0.2	0.05-0.5	●
	120402-1-NL-05	0.2	5°	0.03-0.2	0.05-0.5	●
	120404-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●
	120408-1-NL-05	0.8	5°	0.03-0.2	0.05-0.5	●

● : Standard stock ○ : Made-to-Order

Overview of PCD Positive Inserts

(mm)

Product code	IC	S	LE	D1	AN
TB_0601_	3.97	1.59	2.0	2.2	5°
TC_1102_	6.35	2.38	3.0	2.8	7°
TC_1103_	6.35	3.18	3.0	2.8	7°
TC_16T3_	9.525	3.97	3.0	4.4	7°
TP_0802_	4.76	2.38	3.0	2.4	11°
TP_0902_	5.56	2.38	3.0	2.8	11°



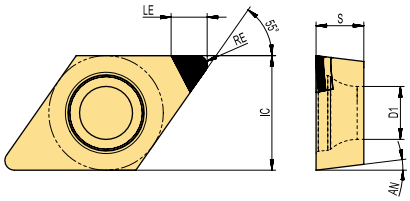
Inserts	Product code	RE (mm)	Rake Angle (°)	Machining conditions / Recommanded parameters f (mm/rev)	Machining conditions / Recommanded parameters ap (mm)	● Good Conditions / N / PD20
	**TBGW 060102-1-NL-05**	0.2	5°	0.03-0.2	0.05-0.5	●
	060104-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●
	TCGW 110202-1-NL-05	0.2	5°	0.03-0.2	0.05-0.5	●
	110204-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●
	110302-1-NL-05	0.2	5°	0.03-0.2	0.05-0.5	●
	110304-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●
	110308-1-NL-05	0.8	5°	0.03-0.2	0.05-0.5	●
	16T302-1-NL-05	0.2	5°	0.03-0.2	0.05-0.5	●
	16T304-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●
	16T308-1-NL-05	0.8	5°	0.03-0.2	0.05-0.5	●
	**TPGW 080202-1-NL-05**	0.2	5°	0.03-0.2	0.05-0.5	●
	080204-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●
	090202-1-NL-05	0.2	5°	0.03-0.2	0.05-0.5	●
	090204-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●

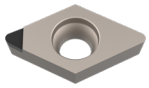
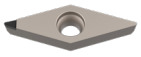
● : Standard stock ○ : Made-to-Order

Overview of PCD Positive Inserts

(mm)

Product code	IC	S	LE	D1	AN
DC_0702_	6.35	2.38	3.0	2.8	7°
DC_11T3_	9.525	3.97	3.0	4.4	7°
VB_1103_	6.35	3.18	3.0	2.8	5°
VB_1604_	9.525	4.76	3.0	4.4	5°



Inserts	Product code	RE (mm)	Rake Angle (°)	Machining conditions: Recommanded parameters f (mm/rev)	Machining conditions: Recommanded parameters ap (mm)	● Good Conditions: N: PD20
	**DCGW 070202-1-NL-05**	0.2	5°	0.03-0.2	0.05-0.5	●
	070204-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●
	11T302-1-NL-05	0.2	5°	0.03-0.2	0.05-0.5	●
	11T304-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●
	11T308-1-NL-05	0.8	5°	0.03-0.2	0.05-0.5	●
	**VBGW 110302-1-NL-05**	0.2	5°	0.03-0.2	0.05-0.5	●
	110304-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●
	160402-1-NL-05	0.2	5°	0.03-0.2	0.05-0.5	●
	160404-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●
	110302-1-NL-05	0.2	5°	0.03-0.2	0.05-0.5	●
	110304-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●
	160402-1-NL-05	0.2	5°	0.03-0.2	0.05-0.5	●
	160404-1-NL-05	0.4	5°	0.03-0.2	0.05-0.5	●

● : Standard stock ○ : Made-to-Order