

INSERTS

PCBN



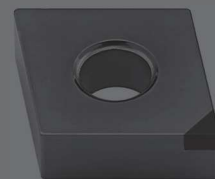
Polycrystalline Cubic Boron Nitride (PCBN) is extremely hard, surpassed only by diamond. However, unlike PCD, PCBN can safely be used for machining ferrous alloys. This material is unrivaled for finishing hardened steels and cast irons and can also be used for turning powder metal alloys and HRSA components.

O Nitreto de Boro Cúbico Policristalino (PCBN) é extremamente duro, apenas superado pelo diamante. No entanto, ao contrário do Diamante Policristalino (PCD), o PCBN pode ser usado com segurança para maquinar ligas ferrosas. Este material é incomparável para o acabamento de aços endurecidos e ferros fundidos, e também pode ser usado para torneamento de ligas de metal em pó e componentes de HRSA.

El Nitruro de Boro Cúbico Policristalino (PCBN) es extremadamente duro, solo superado por el diamante. Sin embargo, a diferencia del Diamante Policristalino (PCD), el PCBN se puede utilizar de manera segura para mecanizar aleaciones ferrosas. Este material es incomparable para el acabado de aceros endurecidos y hierros fundidos, y también se puede utilizar para el torneado de aleaciones de metal en polvo y componentes de HRSA.

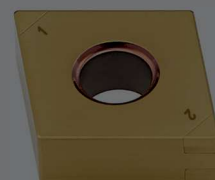
SINGLE TIP > page 586

- > 1 cutting edge
1 aresta de corte | 1 arista de corte
- > Available in negative and positive inserts
Disponível em pastilhas negativas e positivas | Disponible en plaquitas negativas y positivas



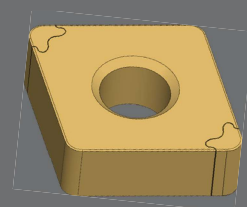
MULTIPLE TIPS > page 586 | 596

- > 2, 3, 4 or 6 cutting edges
2, 3, 4 ou 6 arestas de corte | 2, 3, 4 o 6 aristas de corte
- > Available in negative and positive inserts
Disponível em pastilhas negativas e positivas | Disponible en plaquitas negativas y positivas



NEW SOLID TIPS > page 590

- > 2, 3, 4 or 6 cutting edges
2, 3, 4 ou 6 arestas de corte | 2, 3, 4 o 6 aristas de corte
- > Available only in negative inserts
Disponível apenas em pastilhas negativas | Disponible solo en plaquitas negativas



SOLID CBN > page 592

- > Round inserts from size 06 to 12
Pastilhas redondas de tamanho 06 a 12 | Plaquitas redondas de talla 06 hasta 12
- > Possibility of regrinding
Possibilidade de retificação | Posibilidad de rectificación



PCBN GRADES SELECTION

Seleção de graus | Selección de calidades

PCBN (Polycrystalline-Cubic-Boron-Nitride) is not found in nature, it is a synthetic material which is the result of an high temperature and high pressure process (HTHP). When PCBN tips are brazed to a carbide insert a powerful cutting tool is born.

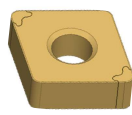
PCBN inserts excel in the finishing and semi-finishing process of hardened steels (45-68 HRC) as well as hard cast iron and heat-resistant super alloys (HRSA).

Grades description Descrição de graus | Descripción de calidades

Grade	Code	Characteristics	Application
PBY603	Y5	Low PCBN content grade with medium grain size and ceramic binder. Great wear and abrasion resistance.	- For continuously and lightly interrupted cutting of Hardened Steel (H01-H10); - Finishing abrasive high strength cast irons; - Can also be used to machine HRSA (S01-S10);
PBY620	Y4	Low PCBN content grade with medium grain size which provides enhanced crater and flank wear resistance with an excellent balance of toughness.	For moderately to heavily interrupted turning of all hardened steels (H10-H20).
PBY625	4C	Low PCBN content grade with very fine grain size for improved toughness.	Heavily interrupted machining of hardened steels.
PBH920	S4	High PCBN content with excellent abrasion resistance.	- For machining all types of cast iron (K01-K30); - First choice for machining ferrous powder metals; - Can also be used to machine HRSA (S20-S30);
PBY930	W3	High abrasive wear resistance; High impact toughness;	For Cast Iron with high Niquel and Chrome content (pumps and engine blocks).
PBY940	W4	High fracture toughness; High thermal conductivity;	For Alloy steels with high content of Cr, grey cast irons and hardened steels with Ni.

NEW

NEW



GEOMETRY SELECTION

Seleção da geometria | Selección de la geometria

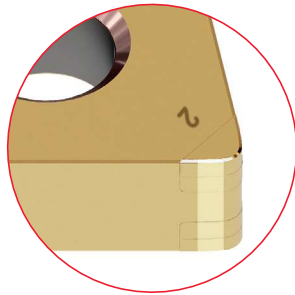
The insert geometry and edge preparation are extremely important in hard part turning since they have a significant influence on tool life and productivity. Palbit product range includes standard and wiper inserts. The standard nose radius generates the lowest cutting forces and has the lowest stability requirements while wiper gives an unbeatable combination of high productivity and excellent surface finish.

A large nose radius provides a greater edge strength and therefore extended tool life. For this reason, it is advised to use the largest allowed nose radius to each process requirements.

Wiper insert Pastilha wiper | Plaquita wiper

Wiper inserts provide two possibilities for process improvement:

- Improved surface finish with standard cutting data;
- Maintained surface finish at substantially higher feed rate;



	Standard (RE = 0,8mm)	Wiper (RE= 0,8mm)
Insert type		
Surface Roughness (Ra)	0,81 µm	0,42 µm

Note

This values were achieved with the next cutting conditions:
H Steel HRC60 | $V_c = 130$ m/min | $f_n = 0,12$ mm/rev | $a_p = 0,2$ mm | $\lambda = 2,5$ mm / ISO 4287

Formulas for surface roughness calculation

Fórmulas para calculo da rugosidade da superfície | Fórmulas para calcular la rugosidad de la superficie

$$Ra = 0,032 \times \frac{f_n^2}{r_\epsilon} \times 1000 \text{ }\mu\text{m}$$

$$R_t = 3,91 \times Ra \text{ }\mu\text{m}$$

Ra - Mean Surface Roughness (μm)

R_t - Roughness Total Height (μm)

f_n - Feed Rate (mm/rev)

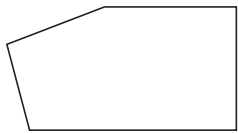
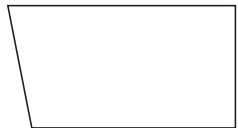
r_ϵ - Insert Radius (mm)

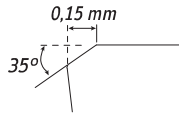
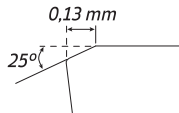
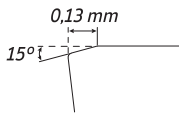
EDGE PREPARATION SELECTION

Seleção da preparação de aresta | Selección de la preparación del filo

The most important criteria for the stability and cutting edge tool-life is to define the correct cutting edge preparation. Its choice is mainly required in order to achieve the best economical result.

Edge preparation Preparação de aresta | Preparación del filo

Cutting forces edge strength		S - Land 	S Preparation with chamfer and honing - Standard - First choice for hard part turning; - Stronger edge than T - land, with more resistance to chipping and fracture, resulting in more predictable tool life; - Generates consistent surface finish; - Critical in interrupted cutting and when using large depth of cut; - Feed rate must be greater than hone size;
		T - Land 	T Preparation with chamfer - T - land is a common edge preparation for PCBN; - Preferred choice for cast iron; - Good alternative to S - land in hard part turning when reduced cutting forces and tighter tolerances are required;
		E - Land 	E Preparation with edge honing - Recommended for HRSA finishing operation; - Honing helps strengthen the edge, giving resistance to chipping and fracturing; - Feed rates must be greater than the hone size to allow actual cutting action to take place and prevent rubbing;
		F - Land 	F Preparation without honing - Sharp cutting edge; - F - Standard is a common edge preparation for PCD; - Recommended for aluminium or other non-ferrous materials;

Honing Types	Specifications
S3515 For interrupted machining	  Difficult Conditions
S2513 For general purpose machining	  Average Conditions
S1513 For stable continuous machining	  Good Conditions

Note
Based on our experience sometimes it is necessary to define edge preparation during several tests to provide the best possible solution for each application.

CHIP BREAKER TAILOR-MADE

Quebra-aparas personalizados | Rompevirutas personalizados

Our laser machining and grinding machining technology can reach a wide range of tailor-made solutions. The chip breakers can be customized according to our customer’s needs and still remain with a high cutting edge quality.

PCBN recommended cutting data

Condições de corte recomendadas para PCBN | Datos de corte recomendadas para PCBN

Workpiece material	Recommend grade for PCBN				VC (m/min)	
	PBH920	PBY603	PBY620	PBY625		
Hardened Steel (HRC 45-68) Tool-Steel, Case Hardened Steel, Continuous Cut (recommended without Coolants)		Ⓐ			Semi-finish	80 - 200
					Finish	80 - 180
Hardened Steel (HRC 45-68) Tool-Steel, Case Hardened Steel, Interrupted Cut (recommended without Coolants)	○		Ⓐ	NEW Ⓐ	Semi-finish	70 - 180
				Ⓐ	Finish	70 - 160
Grey Cast Iron	Ⓐ				Semi-finish	500 - 1000
					Finish	600 - 2000
High Temperature Alloys (Inconel, Waspoloy, Hasteloy) Exotic and High Nickel + Cobalt basis	Ⓐ	Ⓐ			Finish	50 - 300

Ⓐ Recommended ○ Second choice

H		M	
O		V	
P		W	
S		L	
T		A	
C		B	
D		K	
E		R	
F		X	Special

1- Insert shape symbol

Symbol	m (mm)	d (mm)	s (mm)
A	±0.005	±0.025	±0.025
F	±0.005	±0.013	±0.025
C	±0.013	±0.025	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.005	±0.05~±0.13	±0.025
K*	±0.013	±0.05~±0.13	±0.025
L*	±0.025	±0.05~±0.13	±0.025
M*	±0.08~±0.20	±0.05~±0.13	±0.13
N*	±0.08~±0.20	±0.05~±0.13	±0.025
U*	±0.13~±0.38	±0.08~±0.25	±0.13

As a rule, the sides of these inserts are as sintered. Tolerance differs with insert size, for the accuracy of class M, refer to the table on the right.

Detailed dimension of M class insert Insert height Tolerances (mm)					
Inscribed circle					
6.35	±0.08	-	-	-	-
9.525	±0.08	±0.08	±0.11	±0.10	±0.13
12.70	±0.13	±0.13	±0.13	±0.15	-
15.875	±0.15	±0.15	±0.15	±0.18	-
19.05	±0.15	±0.15	±0.15	±0.18	-
25.40	-	±0.18	-	-	-
31.75	-	±0.25	-	-	-

Inscribed circle Tolerances (mm)					
Inscribed circle					
6.35	±0.05	-	-	-	-
9.525	±0.05	±0.05	±0.05	±0.05	±0.05
12.70	±0.08	±0.08	±0.08	±0.08	±0.08
15.875	±0.10	±0.10	±0.10	±0.10	±0.10
19.05	-	-	-	-	±0.10
25.40	-	±0.13	-	-	±0.10
31.75	-	±0.20	-	-	±0.12

3 - Tolerances symbol

A	B	C	D	E
F	G	N	P	O
				Other clearance angle

2 - Normal clearance symbol

ISO	C	N	G	A
ANSI	C	N	G	A

4 - Insert symbol									
symbol	Type	Hole type	Chip breaker	Shape	symbol	Type	Hole type	Chip breaker	Shape
W	with hole	Round hole one countersink (40°~60°)	Without chip breaker		G	with hole	Round hole	Chip breaker on both sides	
T			Chip breaker on one side		N	without hole	-	Without chip breaker	
A	with hole	Round hole	Without chip breaker		R		-	Chip breaker on one side	
M			Chip breaker on one side		X	-	-	-	On request

TURNING PCBN INSERTS ISO IDENTIFICATION SYSTEM

Sistema de identificación ISO para pastillas de PCBN | Codificación ISO para plaquitas de PCBN

 R's	 V's	 D's	 C's	 S's	 T's	 W's	IC		ANSI
							mm	inch	Symbol
-	06	04	-	03	06	02	3,97	5/32	1,20
-	08	05	04	04	08	L3	4,76	3/16	1,50
-	09	06	05	05	09	03	5,56	7/32	1,80
06**	-	-	-	-	-	-	6,00	0,236	
06*	11	07	06	06	11	04	6,35	1/4	2,00
07*	13	09	08	07	13	05	7,94	5/16	2,50
08*	-	-	-	-	-	-	8,00	0,315	
09*	16	11	09	09	16	06	9,525	3/8	3,00
10**	-	-	-	-	-	-	10,00	0,394	
12**	-	-	-	-	-	-	12,00	0,472	
12*	22	15	12	12	22	08	12,70	1/2	4,00
15*	27	19	16	15	27	10	15,875	5/8	5,00
16**	-	-	-	-	-	-	16,00	0,63	
19*	33	23	19	19	33	13	19,05	3/4	6,00
20**	-	-	-	-	-	-	20,00	0,787	
25**	-	-	-	-	-	-	25,00	0,984	
25*	44	31	25	25	44	17	25,40	1,00	8,00
31*	54	38	32	31	54	21	31,75	1 1/4	10,00
32**	-	-	-	-	-	-	32,00	1,26	

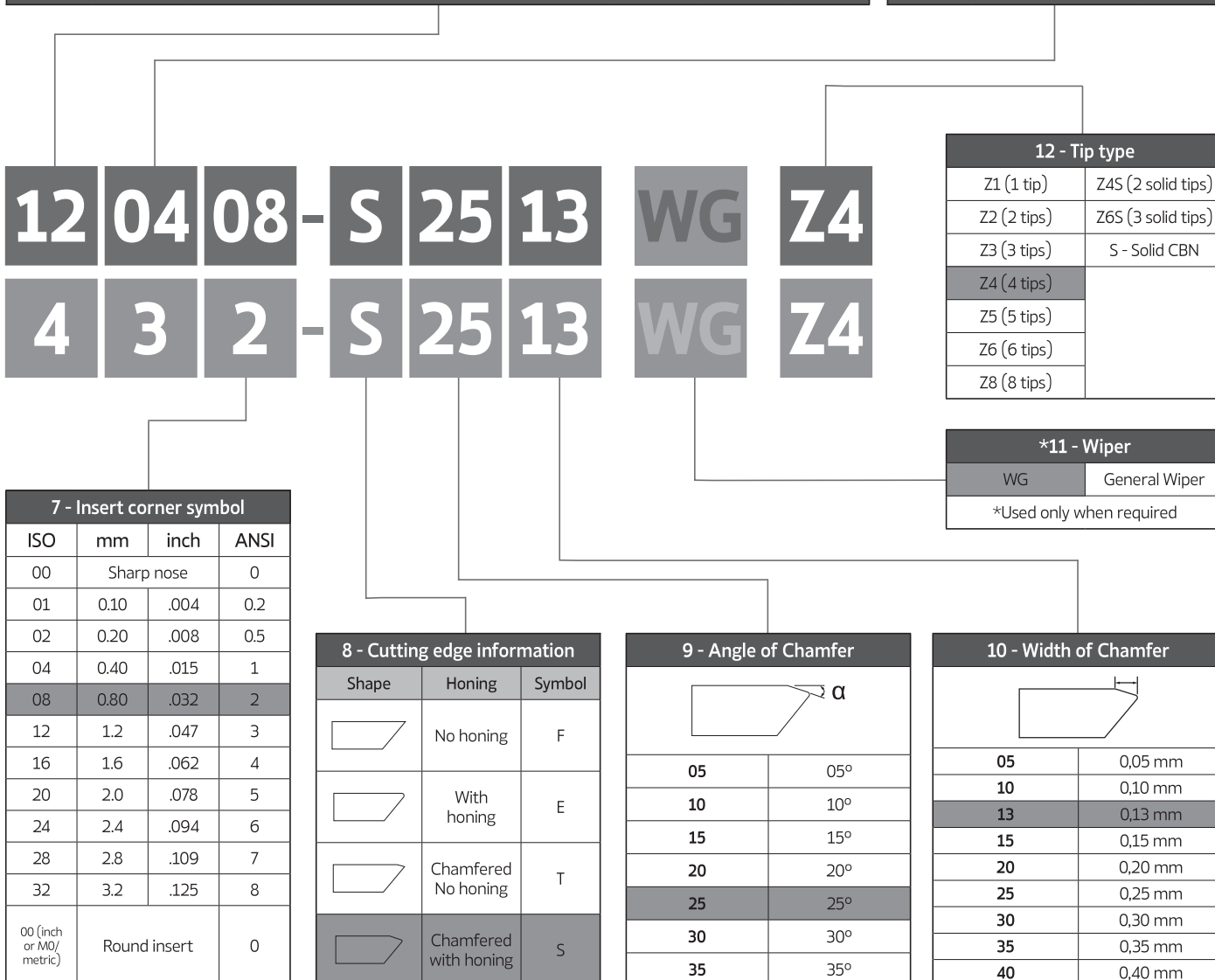
* ANSI designation only
(Radius Designation is 00)

** Metric designation only
(Radius Designation is M0)

According to International Standard ISO 1832 - 2012(E)

"Indexable inserts for cutting tools - Designation"

ISO	mm	ANSI	inch
01	1.59	1	0.062
T1	1.98	1.2	0.078
02	2.38	1.5	0.094
03	3.18	2	0.125
T3	3.97	2.5	0.156
04	4.76	3	0.188
05	5.56	3.5	0.219
06	6.35	4	0.250
07	7.94	5	0.312
09	9.52	6	0.375
12	12.70	8	0.500



CNGA Z1
Single Tip



Size 12

Page C - 586

DNGA Z1
Single Tip



Size 15

Page C - 586

CNGA Z2 | Z4
Multiple Tips



Size 12

Page C - 586

DNGA Z2 | Z4
Multiple Tips



Size 11 | 15

Page C - 586

SNGA Z4
Multiple Tips



Size 12

Page C - 588

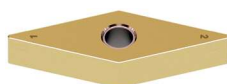
TNGA Z3 | Z6
Multiple Tips



Size 16

Page C - 588

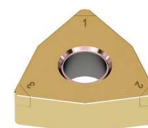
VNGA Z2
Multiple Tips



Size 16

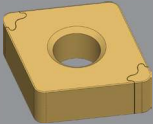
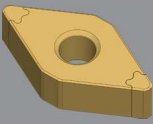
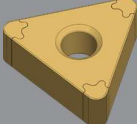
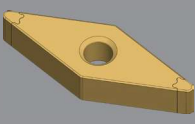
Page C - 588

WNGA Z3 | Z6
Multiple Tips



Size 08

Page C - 588

CNGA Z4S Solid Tips	DNGA Z4S Solid Tips	TNGA Z6S Solid Tips	VNGA Z4S Solid Tips
NEW 	NEW 	NEW 	NEW 
Size 12	Size 11 15	Size 16	Size 16
Page C - 590	Page C - 590	Page C - 590	Page C - 590

RNGN S
Solid CBN



Size 06 | 09 | 12

Page C - 592

				K	H	
		(2) Grade code		S4	Y5	Y4
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	ANSI Reference	PBH920	PBV603	PBV620

SINGLE TIP

	CNGA Z1	1124300	CNGA 120404-S2513 Z1	CNGA 431-S2513 Z1	○	
		1124111	CNGA 120408-S2513 Z1	CNGA 432-S2513 Z1	⊗	
		1124301	CNGA 120412-S2513 Z1	CNGA 433-S2513 Z1	○	
		1124302	CNGA 120416-S2513 Z1	CNGA 434-S2513 Z1	○	
	DNGA Z1	1124306	DNGA 150404-S2513 Z1	DNGA 431-S2513 Z1	○	○
		1124112	DNGA 150408-S2513 Z1	DNGA 432-S2513 Z1	⊗	○
		1124536	DNGA 150412-S2513 Z1	DNGA 433-S2513 Z1	○	○
		1124307	DNGA 150608-S2513 Z1	DNGA 442-S2513 Z1	○	
		1124308	DNGA 150612-S2513 Z1	DNGA 443-S2513 Z1	○	

MULTIPLE TIP

	CNGA Z2	1124343	CNGA 120402-S2513 Z2	CNGA 431.5-S2513 Z2	○	
		1124344	CNGA 120404-S2513 Z2	CNGA 431-S2513 Z2	⊗	⊗
		1124175	CNGA 120408-S2513 Z2	CNGA 432-S2513 Z2	⊗	⊗
		1124568	CNGA 120408-S3515 Z2	CNGA 432-S3515 Z2		⊗
		1124468	CNGA 120412-S2513 Z2	CNGA 433-S2513 Z2	⊗	⊗
	CNGA Z4	1124474	CNGA 120404-S2513 Z4	CNGA 431-S2513 Z4		○
		1124692	CNGA 120408-S1513 Z4	CNGA 432-S1513 Z4	○	
		1124134	CNGA 120408-S2513 Z4	CNGA 432-S2513 Z4	⊗	○
		1124570	CNGA 120408-S3515 Z4	CNGA 432-S3515 Z4		○
		1124475	CNGA 120412-S2513 Z4	CNGA 433-S2513 Z4	⊗	○
		1124571	CNGA 120412-S3515 Z4	CNGA 433-S3515 Z4		○
 Wiper	CNGA WG Z4	1124534	CNGA 120404-S1513 WG Z4	CNGA 431-S1513 WG Z4		○
		1124535	CNGA 120404-S2513 WG Z4	CNGA 431-S2513 WG Z4	○	⊗
		1124517	CNGA 120408-S1513 WG Z4	CNGA 432-S1513 WG Z4	⊗	○
		1124518	CNGA 120408-S2513 WG Z4	CNGA 432-S2513 WG Z4	⊗	⊗
		1125024	CNGA 120412-S1513 WG Z4	CNGA 433-S1513 WG Z4	⊗	
	DNGA Z2	1124616	DNGA 110404-S2513 Z2	DNGA 331-S2513 Z2		⊗
		1124615	DNGA 110408-S2513 Z2	DNGA 332-S2513 Z2		⊗
		1124617	DNGA 110412-S2513 Z2	DNGA 333-S2513 Z2		⊗
		1124482	DNGA 150404-S2513 Z2	DNGA 431-S2513 Z2		⊗
		1124483	DNGA 150408-S2513 Z2	DNGA 432-S2513 Z2		⊗
		1124537	DNGA 150412-S2513 Z2	DNGA 433-S2513 Z2	○	⊗
	DNGA Z4	1124348	DNGA 150604-S2513 Z2	DNGA 441-S2513 Z2	⊗	⊗
		1124177	DNGA 150608-S2513 Z2	DNGA 442-S2513 Z2	⊗	⊗
		1124572	DNGA 150608-S3515 Z2	DNGA 442-S3515 Z2		○
		1124377	DNGA 150612-S2513 Z2	DNGA 443-S2513 Z2	⊗	⊗
		1124573	DNGA 150612-S3515 Z2	DNGA 443-S3515 Z2		○
	DNGA Z4	1124479	DNGA 150604-S2513 Z4	DNGA 441-S2513 Z4		⊗
		1124133	DNGA 150608-S2513 Z4	DNGA 442-S2513 Z4	○	○
		1124575	DNGA 150608-S3515 Z4	DNGA 442-S3515 Z4		○
		1124480	DNGA 150612-S2513 Z4	DNGA 443-S2513 Z4	⊗	○
		1124576	DNGA 150612-S3515 Z4	DNGA 443-S3515 Z4		○

⊗ Stock Items | Itens de stock

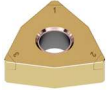
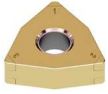
○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

PCBN NEGATIVE INSERTS

Single tip | Multiple tips

Dimensions (mm) Dimensões (mm) Dimensiones (mm)						Cutting conditions Condições de corte Condiciones de corte						Technical drawing Desenho técnico Dibujo técnico
CDEC	IC	S	RE	D1	SL	AP (mm)	MIN	MAX	FN (mm/r)	MIN	MAX	
SINGLE TIP												
1	12,70	4,76	0,40	5,16	2,50	0,15	0,08	0,50	0,08	0,05	0,20	
1	12,70	4,76	0,80	5,16	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
1	12,70	4,76	1,20	5,16	2,30	0,25	0,08	0,50	0,12	0,08	0,30	
1	12,70	4,76	1,60	5,16	2,20	0,30	0,05	0,50	0,15	0,08	0,30	
1	12,70	4,76	0,40	5,16	2,50	0,15	0,08	0,50	0,08	0,05	0,20	
1	12,70	4,76	0,80	5,16	2,50	0,20	0,08	0,50	0,10	0,08	0,30	
1	12,70	4,76	1,20	5,16	2,20	0,25	0,08	0,50	0,12	0,08	0,30	
1	12,70	6,35	0,80	5,16	2,50	0,20	0,08	0,50	0,10	0,08	0,30	
1	12,70	6,35	1,20	5,16	2,20	0,25	0,08	0,50	0,12	0,08	0,30	
MULTIPLE TIP												
2	12,70	4,76	0,20	5,16	2,60	0,15	0,08	0,38	0,05	0,05	0,20	
2	12,70	4,76	0,40	5,16	2,50	0,15	0,08	0,40	0,08	0,05	0,20	
2	12,70	4,76	0,80	5,16	2,40	0,20	0,08	0,50	0,10	0,08	0,30	
2	12,70	4,76	0,80	5,16	2,40	0,20	0,08	0,50	0,10	0,08	0,30	
2	12,70	4,76	1,20	5,16	2,30	0,25	0,08	0,50	0,12	0,08	0,30	
2	12,70	4,76	1,20	5,16	2,30	0,25	0,08	0,50	0,12	0,08	0,30	
4	12,70	4,76	0,40	5,16	2,50	0,15	0,08	0,40	0,08	0,05	0,20	
4	12,70	4,76	0,80	5,16	2,40	0,20	0,08	0,50	0,10	0,08	0,30	
4	12,70	4,76	0,80	5,16	2,40	0,20	0,08	0,50	0,10	0,08	0,30	
4	12,70	4,76	0,80	5,16	2,40	0,20	0,08	0,50	0,10	0,08	0,30	
4	12,70	4,76	1,20	5,16	2,30	0,25	0,08	0,50	0,12	0,08	0,30	
4	12,70	4,76	1,20	5,16	2,30	0,25	0,08	0,50	0,12	0,08	0,30	
4	12,70	4,76	0,40	5,16	2,40	0,15	0,08	0,50	0,08	0,05	0,20	
4	12,70	4,76	0,40	5,16	2,40	0,15	0,08	0,50	0,08	0,05	0,20	
4	12,70	4,76	0,80	5,16	2,40	0,20	0,08	0,50	0,10	0,08	0,30	
4	12,70	4,76	0,80	5,16	2,40	0,20	0,08	0,50	0,10	0,08	0,30	
4	12,70	4,76	0,80	5,16	2,40	0,20	0,08	0,50	0,10	0,08	0,30	
4	12,70	4,76	0,80	5,16	2,40	2,25	0,08	0,50	0,12	0,08	0,30	
2	9,525	4,76	0,40	3,81	2,50	0,10	0,08	0,40	0,08	0,05	0,20	
2	9,525	4,76	0,80	3,81	2,00	0,15	0,08	0,40	0,10	0,08	0,30	
2	9,525	4,76	1,20	3,81	2,00	0,20	0,08	0,40	0,15	0,08	0,30	
2	12,700	4,76	0,40	5,16	2,50	0,15	0,08	0,50	0,08	0,05	0,20	
2	12,700	4,76	0,80	5,16	2,10	0,20	0,08	0,50	0,10	0,08	0,30	
2	12,700	4,76	1,20	5,16	2,20	0,25	0,08	0,50	0,12	0,08	0,30	
2	12,700	6,35	0,40	5,16	2,50	0,15	0,08	0,50	0,08	0,05	0,20	
2	12,700	6,35	0,80	5,16	2,10	0,20	0,08	0,50	0,10	0,08	0,30	
2	12,700	6,35	0,80	5,16	2,10	0,20	0,08	0,50	0,10	0,08	0,30	
2	12,700	6,35	1,20	5,16	2,00	0,25	0,08	0,50	0,12	0,08	0,30	
2	12,700	6,35	1,20	5,16	2,00	0,25	0,08	0,50	0,12	0,08	0,30	
4	12,700	6,35	0,40	5,16	2,50	0,15	0,08	0,40	0,08	0,05	0,20	
4	12,700	6,35	0,80	5,16	2,10	0,20	0,08	0,50	0,10	0,08	0,30	
4	12,700	6,35	0,80	5,16	2,10	0,20	0,08	0,50	0,10	0,08	0,30	
4	12,700	6,35	1,20	5,16	1,70	0,25	0,08	0,50	0,12	0,08	0,30	
4	12,700	6,35	1,20	5,16	1,70	0,25	0,08	0,50	0,12	0,08	0,30	

				K	H	
		(2) Grade code		S4	Y5	Y4
Inserts Pastilhas Plaquetas	(1) Geometry code	ISO Reference	ANSI Reference	PBH920	PBV603	PBV620
MULTIPLE TIP						
	SNGA Z4	1124178	SNGA 120404-S2513 Z4	SNGA 431-S2513 Z4		
		1124538	SNGA 120404-T2513 Z4	SNGA 431-T2513 Z4		
		1124354	SNGA 120408-S2513 Z4	SNGA 432-S2513 Z4		
		1124577	SNGA 120408-S3515 Z4	SNGA 432-S3515 Z4		
		1124433	SNGA 120408-T2513 Z4	SNGA 432-T2513 Z4		
		1124539	SNGA 120412-S2513 Z4	SNGA 433-S2513 Z4		
		1124578	SNGA 120412-S3515 Z4	SNGA 433-S3515 Z4		
		1124540	SNGA 120412-T2513 Z4	SNGA 433-T2513 Z4		
	TNGA Z3	1124357	TNGA 160404-S2513 Z3	TNGA 331-S2513 Z3		
		1124179	TNGA 160408-S2513 Z3	TNGA 332-S2513 Z3		
		1124579	TNGA 160408-S3515 Z3	TNGA 332-S3515 Z3		
		1124469	TNGA 160412-S2513 Z3	TNGA 333-S2513 Z3		
		1124746	TNGA 160412-S3515 Z3	TNGA 333-S3515 Z3		
		1124603	TNGA 160416-S2513 Z3	TNGA 334-S2513 Z3		
		1124604	TNGA 160420-S2513 Z3	TNGA 335-S2513 Z3		
	TNGA Z6	1124477	TNGA 160404-S2513 Z6	TNGA 331-S2513 Z6		
		1124097	TNGA 160408-S2513 Z6	TNGA 332-S2513 Z6		
		1124581	TNGA 160408-S3515 Z6	TNGA 332-S3515 Z6		
		1125023	TNGA 160412-S1513 Z6	TNGA 333-S1513 Z6		
		1124478	TNGA 160412-S2513 Z6	TNGA 333-S2513 Z6		
		1124582	TNGA 160412-S3515 Z6	TNGA 333-S3515 Z6		
	VNGA Z2	1124361	VNGA 160402-S2513 Z2	VNGA 331.5-S2513 Z2		
		1124163	VNGA 160404-S2513 Z2	VNGA 331-S2513 Z2		
		1124098	VNGA 160408-S2513 Z2	VNGA 332-S2513 Z2		
		1124470	VNGA 160412-S2513 Z2	VNGA 333-S2513 Z2		
	WNGA Z3	1124471	WNGA 080404-S2513 Z3	WNGA 431-S2513 Z3		
		1124472	WNGA 080408-S2513 Z3	WNGA 432-S2513 Z3		
		1124583	WNGA 080408-S3515 Z3	WNGA 432-S3515 Z3		
		1124473	WNGA 080412-S2513 Z3	WNGA 433-S2513 Z3		
		1124584	WNGA 080412-S3515 Z3	WNGA 433-S3515 Z3		
	WNGA Z6	1124589	WNGA 080404-S2513 Z6	WNGA 431-S2513 Z6		
		1124588	WNGA 080408-S2513 Z6	WNGA 432-S2513 Z6		
		1124585	WNGA 080408-S3515 Z6	WNGA 432-S3515 Z6		
		1124587	WNGA 080412-S2513 Z6	WNGA 433-S2513 Z6		
		1124586	WNGA 080412-S3515 Z6	WNGA 433-S3515 Z6		

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

PCBN NEGATIVE INSERTS

Multiple tips

Dimensions (mm) Dimensões (mm) Dimensiones (mm)						Cutting conditions Condições de corte Condiciones de corte						Technical drawing Desenho técnico Dibujo técnico
CDEC	IC	S	RE	D1	SL	AP (mm)	MIN	MAX	FN (mm/r)	MIN	MAX	
MULTIPLE TIP												
4	12,700	4,76	0,40	5,16	2,40	0,15	0,08	0,40	0,08	0,05	0,20	
4	12,700	4,76	0,40	5,16	2,40	0,15	0,08	0,40	0,08	0,05	0,20	
4	12,700	4,76	0,80	5,16	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
4	12,700	4,76	0,80	5,16	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
4	12,700	4,76	0,80	5,16	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
4	12,700	4,76	1,20	5,16	2,30	0,25	0,08	0,50	0,12	0,08	0,30	
4	12,700	4,76	1,20	5,16	2,30	0,25	0,08	0,50	0,12	0,08	0,30	
4	12,700	4,76	1,20	5,16	2,30	0,25	0,08	0,50	0,12	0,08	0,30	
3	9,525	4,76	0,40	3,81	2,30	0,15	0,08	0,50	0,08	0,05	0,20	
3	9,525	4,76	0,80	3,81	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
3	9,525	4,76	0,80	3,81	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
3	9,525	4,76	1,20	3,81	2,00	0,25	0,08	0,60	0,12	0,08	0,30	
3	9,525	4,76	1,20	3,81	2,00	0,25	0,08	0,60	0,12	0,08	0,30	
3	9,525	4,76	1,60	3,81	3,00	0,30	0,08	0,70	0,14	0,10	0,35	
3	9,525	4,73	2,00	3,81	3,00	0,35	0,10	0,55	0,16	0,10	0,40	
6	9,525	4,76	0,40	3,81	2,30	0,15	0,08	0,50	0,08	0,05	0,20	
6	9,525	4,76	0,80	3,81	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
6	9,525	4,76	0,80	3,81	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
6	9,525	4,76	1,20	3,81	2,00	0,25	0,08	0,60	0,12	0,08	0,30	
6	9,525	4,76	1,20	3,81	2,00	0,25	0,08	0,60	0,12	0,08	0,30	
6	9,525	4,76	1,20	3,81	2,00	0,25	0,08	0,60	0,12	0,08	0,30	
6	9,525	4,76	1,20	3,81	2,00	0,25	0,08	0,60	0,12	0,08	0,30	
2	9,525	4,76	20,00	3,81	3,00	0,13	0,08	0,50	0,05	0,05	0,20	
2	9,525	4,76	0,40	3,81	2,80	0,15	0,08	0,50	0,08	0,05	0,20	
2	9,525	4,76	0,80	3,81	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
2	9,525	4,76	1,20	3,81	1,90	0,25	0,08	0,50	0,12	0,08	0,30	
3	12,700	4,76	0,40	5,16	2,30	0,15	0,08	0,40	0,08	0,05	0,20	
3	12,700	4,76	0,80	5,16	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
3	12,700	4,76	0,80	5,16	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
3	12,700	4,76	1,20	5,16	2,00	0,25	0,08	0,60	0,12	0,08	0,30	
3	12,700	4,76	1,20	5,16	2,00	0,25	0,08	0,60	0,12	0,08	0,30	
6	12,700	4,76	1,20	5,16	2,00	0,25	0,08	0,40	0,12	0,08	0,30	
6	12,700	4,76	0,80	5,16	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
6	12,700	4,76	0,80	5,16	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
6	12,700	4,76	0,40	5,16	2,30	0,15	0,08	0,60	0,08	0,05	0,20	
6	12,700	4,76	1,20	5,16	2,00	0,25	0,08	0,60	0,12	0,08	0,30	
6	12,700	4,76	1,20	5,16	2,00	0,25	0,08	0,60	0,12	0,08	0,30	

C

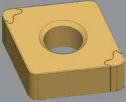
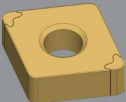
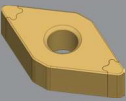
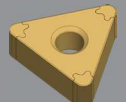
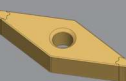
NEW PCBN NEGATIVE INSERTS

Solid tips

TURNING

				H		
		(2) Grade code		Y5	Y4	4C
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	ANSI Reference	PBY603	PBY620	PBY625

SOLID TIPS

NEW CNGA Z4S 	1124982	CNGA 120404-S2515 Z4S	CNGA 431-S2515 Z4S			○
	1124983	CNGA 120408-S2515 Z4S	CNGA 432-S2515 Z4S			⊗
	1124804	CNGA 120412-S2513 Z4S	CNGA 433-S2513 Z4S			⊗
NEW CNGA WG Z4S  Wiper	1125025	CNGA 120412-S1513 WG Z4S	CNGA 433-S1513 WG Z4S	○		
NEW DNGA Z4S 	1124992	DNGA 110404-S2515 Z4S	DNGA 331-S2515 Z4S			○
	1124993	DNGA 110408-S2515 Z4S	DNGA 332-S2515 Z4S			⊗
	1124994	DNGA 110412-S2515 Z4S	DNGA 333-S2515 Z4S			⊗
	1124986	DNGA 150404-S2515 Z4S	DNGA 431-S2515 Z4S			○
	1124987	DNGA 150408-S2515 Z4S	DNGA 432-S2515 Z4S			⊗
	1124988	DNGA 150412-S2515 Z4S	DNGA 433-S2515 Z4S			⊗
NEW TNGA Z6S 	1124984	TNGA 160404-S2515 Z6S	TNGA 331-S2515 Z6S			○
	1124985	TNGA 160408-S2515 Z6S	TNGA 332-S2515 Z6S			⊗
	1124960	TNGA 160412-S1513 Z6S	TNGA 333-S1513 Z6S	⊗		
	1124836	TNGA 160412-S2513 Z6S	TNGA 333-S2513 Z6S			⊗
	1125026	TNGA 160420-S2513 Z6S	TNGA 335-S2513 Z6S	⊗	⊗	
NEW VNGA Z4S 	1124995	VNGA 160404-S2515 Z4S	VNGA 331-S2515 Z4S			○
	1124996	VNGA 160408-S2515 Z4S	VNGA 332-S2515 Z4S			⊗
	1124997	VNGA 160412-S2515 Z4S	VNGA 333-S2515 Z4S			⊗

 Stock Itens | Itens de stock
  Available under request | Disponível sob consulta | Disponible bajo consulta
 Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

Automatic Lathes

Spare Parts

Technical Data

PCBN NEGATIVE INSERTS

Solid tips

Dimensions (mm) Dimensões (mm) Dimensiones (mm)						Cutting conditions Condições de corte Condiciones de corte						Technical drawing Desenho técnico Dibujo técnico
CDEC	IC	S	RE	D1	SL	AP (mm)	MIN	MAX	FN (mm/r)	MIN	MAX	
SOLID TIPS												
4	12,700	4,76	0,40	5,16	2,20	0,15	0,08	0,50	0,08	0,05	0,20	
4	12,700	4,76	0,80	5,16	2,10	0,20	0,08	0,50	0,10	0,08	0,30	
4	12,700	4,76	1,20	5,16	2,00	0,25	0,08	0,50	0,12	0,08	0,30	
4	12,700	4,76	1,20	5,16	2,10	0,25	0,08	0,50	0,12	0,08	0,30	
4	9,525	4,76	0,40	3,81	2,20	0,10	0,08	0,40	0,08	0,05	0,20	
4	9,525	4,76	0,80	3,81	2,10	0,15	0,08	0,40	0,10	0,08	0,30	
4	9,525	4,76	1,20	3,81	2,00	0,20	0,08	0,40	0,15	0,08	0,30	
4	12,700	4,76	0,40	5,16	2,20	0,15	0,08	0,50	0,08	0,05	0,20	
4	12,700	4,76	0,80	5,16	2,10	0,20	0,08	0,50	0,10	0,08	0,30	
4	12,700	4,76	1,20	5,16	2,00	0,25	0,08	0,50	0,12	0,08	0,30	
6	9,525	4,76	0,40	3,81	2,20	0,15	0,08	0,50	0,08	0,05	0,20	
6	9,525	4,76	0,80	3,81	2,10	0,20	0,08	0,50	0,10	0,08	0,30	
6	9,525	4,76	1,20	3,81	2,00	0,25	0,08	0,60	0,12	0,08	0,30	
6	9,525	4,76	1,20	3,81	2,00	0,25	0,08	0,60	0,12	0,08	0,30	
6	9,525	4,76	2,00	3,81	2,50	0,35	0,10	0,70	0,16	0,10	0,40	
4	9,525	4,76	0,40	3,81	2,20	0,15	0,08	0,50	0,08	0,05	0,20	
4	9,525	4,76	0,80	3,81	2,10	0,20	0,08	0,50	0,10	0,08	0,30	
4	9,525	4,76	1,20	3,81	2,00	0,25	0,08	0,50	0,12	0,08	0,30	

				H	
		(2) Grade code		W3	W4
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	ANSI Reference	PBY930	PBY940

SOLID INSERT

	RNGN S				
	1124631	RNGN 060300-S2020 S	RNGN 220-S2020 S	☐	☒
	1124630	RNGN 090300-S2020 S	RNGN 320-S2020 S	☐	☒
	1124629	RNGN 120300-S2020 S	RNGN 420-S2020 S	☐	☒
	1124699	RNGN 120400-S2020 S	RNGN 430-S2020 S	☐	☒

☒ Stock Items | Itens de stock☐ Available under request | Disponível sob consulta | Disponible bajo consultaInsert Order Code: ⁽¹⁾ Repair code + ⁽²⁾ Grade code

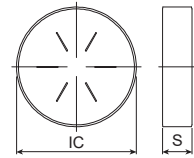
			H	
		(2) Grade code	W3	W4
(1) Repair code	Reference Referência Referencia		PBY930	PBY940
3120072	RNGN 06 (2.18) 00-S2020S (0603)		☐	☐
3120058	RNGN 060200-S2020 S (0903)		☐	☐
3120068	RNGN 060300-S2020 S (0903)		☐	☐
3120071	RNGN 060300-S2020 S (1203)		☐	☐
3120057	RNGN 090300-S2020 S (1203)		☐	☐
3120070	RNGN 090400-S2020 S (1204)		☐	☐
3120056	RNGN 120300-S2020 S (1204)		☐	☐

☒ Stock Items | Itens de stock☐ Available under request | Disponível sob consulta | Disponible bajo consultaInsert Order Code: ⁽¹⁾ Repair code + ⁽²⁾ Grade code

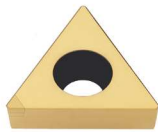
Dimensions (mm) Dimensões (mm) Dimensiones (mm)		Cutting conditions Condições de corte Condiciones de corte						Technical drawing Desenho técnico Dibujo técnico
IC	S	AP (mm)	MIN	MAX	FN (mm/r)	MIN	MAX	

SOLID INSERT

4	2,40	0,15	0,08	0,40	0,08	0,05	0,20
4	2,40	0,15	0,08	0,40	0,08	0,05	0,20
4	2,00	0,20	0,08	0,50	0,10	0,08	0,30
6	2,00	0,25	0,08	0,60	0,12	0,08	0,30

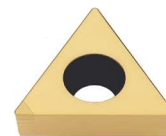


Final Dimensions (mm) Dimensões Finais (mm) Dimensiones Finales (mm)		Cutting conditions Condições de corte Condiciones de corte
IC	S	AP (mm)
6,35	2,18	RNGN 060300-S2020 S
6,35	2,38	RNGN 090300-S2020 S
6,35	3,18	RNGN 090300-S2020 S
6,35	3,18	RNGN 120300-S2020 S
9,53	3,18	RNGN 120300-S2020 S
9,53	4,76	RNGN 120400-S2020 S
12,7	3,18	RNGN 120400-S2020 S

TPGW Z1
Single Tip

Size 11

Page C- 598

CCGW Z2
Multiple Tips**DCGW Z2**
Multiple Tips**TCGW | TPGW Z3**
Multiple Tips

Size 06 | 09

Size 07 | 11

Size 09 | 11

Page C- 596

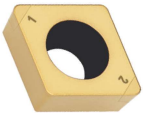
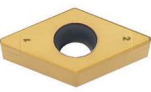
Page C- 596

Page C- 598

POSITIVE PCBN INSERTS OVERVIEW

Vista genérica de pastilhas positivas PCBN | Visión general de plaquitas positivas de PCBN

VBGW Z2 Multiple Tips		VCGW Z2 Multiple Tips	
			
Size 11 16		Size 16	
Page C- 598		Page C- 598	

				H	
		(2) Grade code		Y5	Y4
Inserts Pastilhas Plaquetas	(1) Geometry code	ISO Reference	ANSI Reference	PBV603	PBV620
	1124605	CCGW 060202-S1513 Z2	CCGW 21.50.5-S1513 Z2	⊗	⊗
	1124635	CCGW 060202-S2513 Z2	CCGW 21.50.5-S2513 Z2	⊗	⊗
	1124606	CCGW 060204-S1513 Z2	CCGW 21.51-S1513 Z2	⊗	⊗
	1124555	CCGW 060204-S2513 Z2	CCGW 21.51-S2513 Z2	⊗	⊗
	1124607	CCGW 060208-S1513 Z2	CCGW 21.52-S1513 Z2	⊗	⊗
	1124636	CCGW 060208-S2513 Z2	CCGW 21.52-S2513 Z2	⊗	⊗
	1124638	CCGW 09T302-S2513 Z2	CCGW 32.50.5-S2513 Z2	⊗	⊗
	1124640	CCGW 09T304-S2513 Z2	CCGW 32.51-S2513 Z2	⊗	⊗
	1124632	CCGW 09T308-S2513 Z2	CCGW 32.52-S2513 Z2	⊗	⊗
	1124637	CCGW 09T302-S2513 WG Z2	CCGW 32.50.5-S2513 WG Z2	○	○
	1124639	CCGW 09T304-S2513 WG Z2	CCGW 32.51-S2513 WG Z2	⊗	⊗
	1124641	CCGW 09T308-S2513 WG Z2	CCGW 32.52-S2513 WG Z2	⊗	⊗
	1124608	CCGW 09T302-S1513 Z2	CCGW 32.50.5-S1513 Z2	⊗	⊗
	1124609	CCGW 09T304-S1513 Z2	CCGW 32.51-S1513 Z2	⊗	⊗
	1124610	CCGW 09T308-S1513 Z2	CCGW 32.52-S1513 Z2	⊗	⊗
	1124642	DCGW 070202-S1513 Z2	DCGW 21.50.5-S1513 Z2	⊗	○
	1124611	DCGW 070202-S2513 Z2	DCGW 21.50.5-S2513 Z2	⊗	⊗
	1124643	DCGW 070204-S1513 Z2	DCGW 21.51-S1513 Z2	⊗	○
	1124436	DCGW 070204-S2513 Z2	DCGW 21.51-S2513 Z2	⊗	⊗
	1124644	DCGW 070208-S1513 Z2	DCGW 21.52-S1513 Z2	○	○
	1124612	DCGW 070208-S2513 Z2	DCGW 21.52-S2513 Z2	⊗	⊗
	1124613	DCGW 11T302-S2513 Z2	DCGW 32.50.5-S2513 Z2	⊗	⊗
	1124554	DCGW 11T304-S2513 Z2	DCGW 32.51-S2513 Z2	⊗	⊗
	1124744	DCGW 11T304-S3515 Z2	DCGW 32.51-S3515 Z2		⊗
	1124614	DCGW 11T308-S2513 Z2	DCGW 32.52-S2513 Z2	⊗	⊗
	1124745	DCGW 11T308-S3515 Z2	DCGW 32.52-S3515 Z2		⊗
	1124645	DCGW 11T302-S1513 Z2	DCGW 32.50.5-S1513 Z2	⊗	○
	1124647	DCGW 11T304-S1513 Z2	DCGW 32.51-S1513 Z2	⊗	○
	1124649	DCGW 11T308-S1513 Z2	DCGW 32.52-S1513 Z2	⊗	○

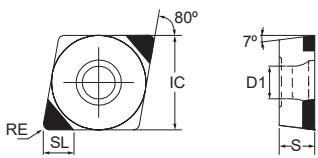
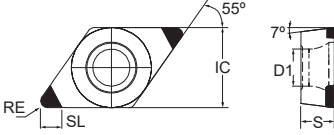
⊗ Stock Items | Itens de stock

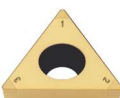
○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

PCBN POSITIVE INSERTS

Multiple tips

Dimensions (mm) Dimensões (mm) Dimensiones (mm)						Cutting conditions Condições de corte Condiciones de corte						Technical drawing Desenho técnico Dibujo técnico
CDEC	IC	S	RE	D1	SL	AP (mm)	MIN	MAX	FN (mm/r)	MIN	MAX	
2	6,350	2,38	0,20	2,80	2,00	0,15	0,05	0,20	0,08	0,05	0,20	
2	6,350	2,38	0,20	2,80	2,40	0,15	0,05	0,20	0,08	0,05	0,20	
2	6,350	2,38	0,40	2,80	2,00	0,15	0,05	0,40	0,08	0,05	0,25	
2	6,350	2,38	0,40	2,80	2,00	0,15	0,05	0,40	0,08	0,05	0,25	
2	6,350	2,38	0,80	2,80	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
2	6,350	2,38	0,80	2,80	2,40	0,20	0,08	0,50	0,10	0,08	0,30	
2	9,525	3,97	0,20	4,40	2,50	0,15	0,05	0,20	0,08	0,05	0,20	
2	9,525	3,97	0,40	4,40	2,50	0,20	0,08	0,40	0,10	0,05	0,25	
2	9,525	3,97	0,80	4,40	2,50	0,20	0,08	0,50	0,10	0,08	0,30	
2	9,525	3,97	0,20	4,40	2,40	0,15	0,05	0,20	0,08	0,05	0,20	
2	9,525	3,97	0,40	4,40	2,40	0,20	0,08	0,40	0,10	0,05	0,25	
2	9,525	3,97	0,80	4,40	2,40	0,20	0,08	0,50	0,10	0,08	0,30	
2	9,525	3,97	0,20	4,40	2,00	0,15	0,05	0,20	0,08	0,05	0,20	
2	9,525	3,97	0,40	4,40	2,00	0,20	0,08	0,40	0,10	0,05	0,25	
2	9,525	3,97	0,80	4,40	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
2	6,350	2,38	0,20	2,80	2,50	0,15	0,08	0,20	0,08	0,05	0,20	
2	6,350	2,38	0,20	2,80	2,00	0,15	0,08	0,20	0,08	0,05	0,20	
2	6,350	2,38	0,40	2,80	2,50	0,15	0,08	0,40	0,08	0,05	0,25	
2	6,350	2,38	0,40	2,80	2,40	0,15	0,08	0,40	0,08	0,05	0,25	
2	6,350	2,38	0,80	2,80	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
2	6,350	2,38	0,80	2,80	2,50	0,20	0,08	0,50	0,10	0,08	0,30	
2	9,525	3,97	0,20	4,40	2,70	0,15	0,08	0,20	0,08	0,05	0,20	
2	9,525	3,97	0,40	4,40	2,50	0,20	0,08	0,40	0,10	0,05	0,25	
2	9,525	3,97	0,40	4,40	2,50	0,20	0,08	0,40	0,10	0,05	0,25	
2	9,525	3,97	0,80	4,40	2,00	0,20	0,08	0,50	0,10	0,08	0,30	Automatic Lathes
2	9,525	3,97	0,80	4,40	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
2	9,525	3,97	0,20	4,40	2,70	0,15	0,08	0,20	0,08	0,05	0,20	
2	9,525	3,97	0,40	4,40	2,50	0,20	0,08	0,40	0,10	0,05	0,25	
2	9,525	3,97	0,80	4,40	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
2	9,525	3,97	0,20	4,40	2,70	0,15	0,08	0,20	0,08	0,05	0,20	
2	9,525	3,97	0,40	4,40	2,50	0,20	0,08	0,40	0,10	0,05	0,25	
2	9,525	3,97	0,80	4,40	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
2	9,525	3,97	0,20	4,40	2,70	0,15	0,08	0,20	0,08	0,05	0,20	
2	9,525	3,97	0,40	4,40	2,50	0,20	0,08	0,40	0,10	0,05	0,25	
2	9,525	3,97	0,80	4,40	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
2	9,525	3,97	0,20	4,40	2,70	0,15	0,08	0,20	0,08	0,05	0,20	

				H	
		(2) Grade code		Y5	Y4
Inserts Pastilhas Plaquetas	(1) Geometry code	ISO Reference	ANSI Reference	PBV603	PBV620
	TCGW Z3	1124715	TCGW 110204-S2513 Z3	TCGW 21.51-S2513 Z3	○
		1124434	TCGW 16T304-S2513 Z3	TCGW 32.51-S2513 Z3	⊗
		1124651	TCGW 16T308-S2513 Z3	TCGW 32.52-S2513 Z3	⊗
	TPGW Z1	1124657	TPGW 110302-S2513 Z1	TPGW 220.5-S2513 Z1	○
		1124660	TPGW 110304-S2513 Z1	TPGW 221-S2513 Z1	○
		1124598	TPGW 110308-S2513 Z1	TPGW 222-S2513 Z1	⊗
	TPGW Z3	1124653	TPGW 090202-S2513 Z3	TPGW 1.81.50.5-S2513 Z3	○
		1124655	TPGW 090204-S2513 Z3	TPGW 1.81.51-S2513 Z3	⊗
		1124652	TPGW 090202-S1513 Z3	TPGW 1.81.50.5-S1513 Z3	○
		1124654	TPGW 090204-S1513 Z3	TPGW 1.81.51-S1513 Z3	○
		1124658	TPGW 110302-S2513 Z3	TPGW 220.5-S2513 Z3	⊗
		1124661	TPGW 110304-S2513 Z3	TPGW 221-S2513 Z3	⊗
		1124663	TPGW 110308-S2513 Z3	TPGW 222-S2513 Z3	○
		1124656	TPGW 110302-S1513 Z3	TPGW 220.5-S1513 Z3	○
	VBGW Z2	1124664	VBGW 110302-S2513 Z2	VBGW 220.5-S2513 Z2	⊗
		1124665	VBGW 110304-S2513 Z2	VBGW 221-S2513 Z2	⊗
		1124666	VBGW 110308-S2513 Z2	VBGW 222-S2513 Z2	○
		1124618	VBGW 160402-S2513 Z2	VBGW 330.5-S2513 Z2	⊗
		1124619	VBGW 160404-S2513 Z2	VBGW 331-S2513 Z2	⊗
		1124620	VBGW 160408-S2513 Z2	VBGW 332-S2513 Z2	⊗
		1124621	VBGW 160402-S1513 Z2	VBGW 330.5-S1513 Z2	⊗
		1124622	VBGW 160404-S1513 Z2	VBGW 331-S1513 Z2	⊗
	VBGW Z2	1124623	VBGW 160408-S1513 Z2	VBGW 332-S1513 Z2	⊗
		1124667	VCGW 160404-S2513 Z2	VCGW 331-S2513 Z2	⊗
		1124668	VCGW 160408-S2513 Z2	VCGW 332-S2513 Z2	⊗

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

PCBN POSITIVE INSERTS

Multiple tips

Dimensions (mm) Dimensões (mm) Dimensiones (mm)						Cutting conditions Condições de corte Condiciones de corte						Technical drawing Desenho técnico Dibujo técnico
CDEC	IC	S	RE	D1	SL	AP (mm)	MIN	MAX	FN (mm/r)	MIN	MAX	
3	6,350	2,38	0,20	4,40	2,50	0,15	0,08	0,40	0,08	0,05	0,20	
3	9,525	3,97	0,40	4,40	2,50	0,15	0,08	0,45	0,08	0,05	0,20	
3	9,525	3,97	0,80	4,40	2,00	0,20	0,08	0,45	0,10	0,08	0,30	
1	6,350	3,18	0,20	2,80	2,40	0,15	0,08	0,20	0,08	0,05	0,15	
1	6,350	3,18	0,40	2,80	2,30	0,15	0,08	0,40	0,08	0,05	0,20	
1	6,350	3,18	0,80	2,80	2,40	0,20	0,08	0,45	0,10	0,08	0,20	
3	5,560	2,38	0,20	2,50	2,50	0,10	0,05	0,20	0,08	0,05	0,15	
3	5,560	2,38	0,40	2,50	2,30	0,15	0,08	0,40	0,08	0,05	0,15	
3	5,560	2,38	0,20	2,50	2,50	0,10	0,08	0,20	0,08	0,05	0,15	
3	5,560	2,38	0,40	2,50	2,30	0,15	0,08	0,40	0,08	0,05	0,15	
3	6,350	3,18	0,20	2,80	2,40	0,15	0,08	0,20	0,08	0,05	0,15	
3	6,350	3,18	0,40	2,80	2,30	0,15	0,08	0,40	0,08	0,05	0,20	
3	6,350	3,18	0,80	2,80	2,00	0,20	0,08	0,50	0,10	0,08	0,20	
3	6,350	3,18	0,20	2,80	2,40	0,15	0,08	0,20	0,08	0,05	0,15	
3	6,350	3,18	0,40	2,80	2,30	0,15	0,08	0,40	0,08	0,05	0,20	
3	6,350	3,18	0,80	2,80	2,00	0,20	0,08	0,50	0,10	0,08	0,20	
2	6,350	3,18	0,20	2,80	3,20	0,10	0,08	0,20	0,05	0,05	0,15	
2	6,350	3,18	0,40	2,80	2,80	0,15	0,08	0,40	0,08	0,05	0,20	
2	6,350	3,18	0,80	2,80	2,00	0,15	0,08	0,50	0,10	0,08	0,25	
2	9,525	4,76	0,20	4,40	2,00	0,10	0,08	0,20	0,08	0,05	0,15	
2	9,525	4,76	0,40	4,40	2,00	0,15	0,08	0,40	0,08	0,05	0,20	
2	9,525	4,76	0,80	4,40	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
2	9,525	4,76	0,20	4,40	2,00	0,10	0,08	0,20	0,08	0,05	0,15	
2	9,525	4,76	0,40	4,40	2,00	0,15	0,08	0,40	0,08	0,05	0,20	
2	9,525	4,76	0,80	4,40	2,00	0,20	0,08	0,50	0,10	0,08	0,30	
2	9,525	4,76	0,40	4,40	2,80	0,15	0,08	0,40	0,08	0,05	0,20	
2	9,525	4,76	0,80	4,40	2,00	0,20	0,08	0,50	0,10	0,08	0,30	