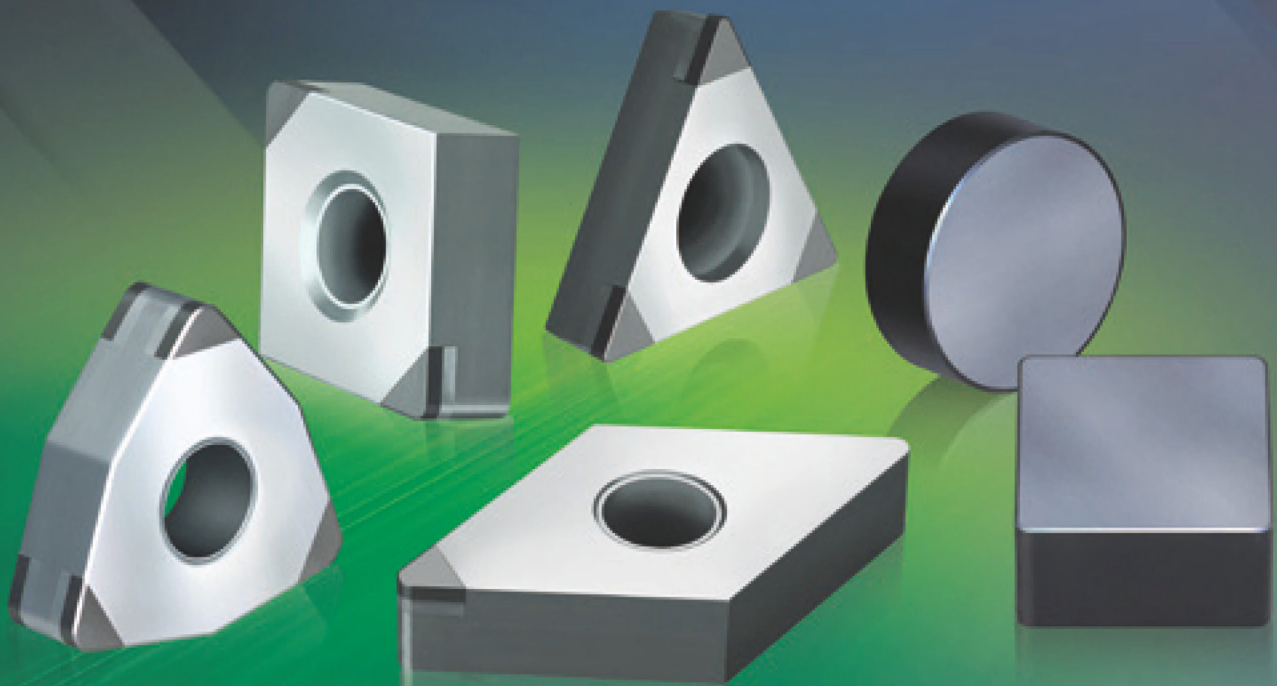




*New product for
turning*



PCBN&PCD
inserts

PCBN materials has high hardness, high thermal stability and high chemical rigidity, there will be no chemical reaction with black metal at high temperature, and the cutting temperature can reach 1200-1300°C . Most suitable for hardening steel, cast iron, powder metallurgy and superalloy machining.



PCBN tools

▼ PCBN insert code rules

B K C 1 0 1 1

Type of superhard material

PCBN material

Coating or not

C	Coating
Without	Uncoating

Material code

Code Workpiece material

K	Cast iron
H	Hardened steel
S	Powder metallurgy superalloy

Application range

01	Continuous cutting/ wear-resistance
10	
15	
20	
25	Interrupted cutting/ impact-resistance
30	

For cast iron

BKC1011

- Features**
 - Excellent wear resistance and impact resistance;
- Application recommendation**
 - Suitable for continuous to discontinuous working conditions of high-speed finishing, can achieve higher surface quality.

BKC2531

- Features**
 - Excellent wear resistance and fracture toughness;
- Application recommendation**
 - Suitable for continuous to discontinuous conditions at high-speed heavy-duty roughing condition.

For powder metallurgy and superalloy

BSC2011

- Features**
 - Effectively balance wear resistance and impact resistance;
- Application recommendation**
 - It is suitable for processing powder metallurgy parts in continuous to medium discontinuous condition, especially for machining of powder metallurgy parts with alloying element content < 10%.

For Hardening steel

BHC0121

- Features**
 - High resistance to heat and chemical wear;
- Application recommendation**
 - Suitable for high speed finishing for hardened steel at continuous to slightly interrupted cutting conditions, especially suitable for machining of 20CrMnTi, 20CrMn, 18Cr2Ni4WA isocarbided hardened steel.

BHC1011

- Features**
 - Effectively balance wear resistance and chemical wear resistance;
- Application recommendation**
 - Good versatility, suitable for continuous to slightly interrupted machining of all kinds of hardened steel.

BHC2011

- Features**
 - Excellent wear resistance and impact strength;
- Application recommendation**
 - It is suitable for finishing quenched steel in continuous to moderate interrupted conditions, especially for processing quenched bearing steel and die steel such as GCr15, 100Cr6, 18Cr2Ni4WA.

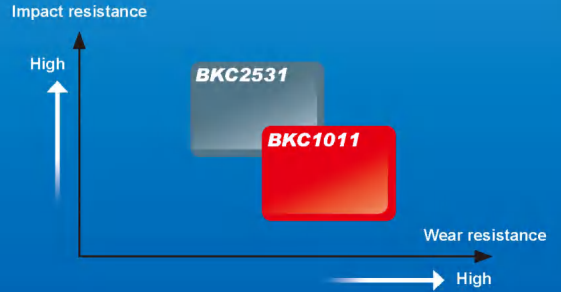
BHC2511

- Features**
 - Excellent chemical wear resistance and impact strength;
- Application recommendation**
 - It is suitable for finishing quenched steel in continuous to medium interrupted working conditions, especially for processing 20CrMnTi, 20CrMn, 18Cr2Ni4WA isocarbiding quenched steel.

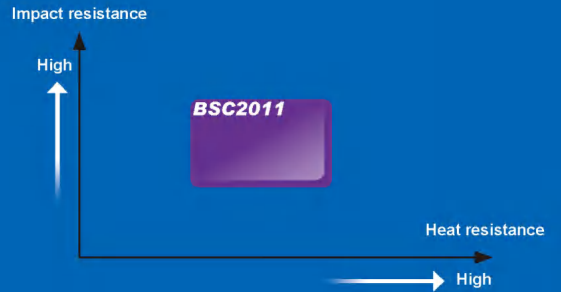
BHC3511

- Features**
 - Excellent collapse resistance and fracture toughness;
- Application recommendation**
 - It is suitable for rough and fine machining of all kinds of quenched steel in medium interrupted to severe interrupted conditions.

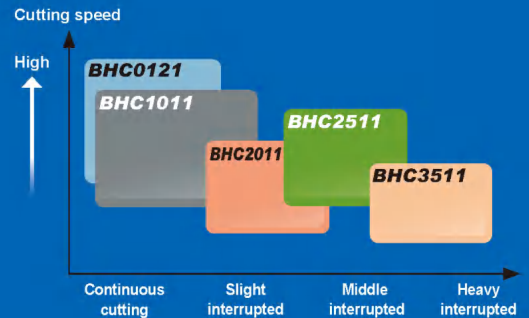
K



S



H



Recommended cutting parameters

Grade	Workpiece material	Cutting speed (SFPM)	Feed rate (in/r)	Cutting depth (in)
BKC1011	Grey cast iron	1310-2620-4920	0.001-0.008-0.020	0.004-0.008-0.012
	Hard cast iron	260-390-520	0.002-0.012-0.020	0.002-0.003-0.004
BKC2531	Grey cast iron	980-1480-1970	0.004-0.012-0.020	0.039-0.079-0.118
	Hard cast iron	160-330-490	0.004-0.014-0.020	0.039-0.079-0.118
BHC0121	Hardened steel	490-660-820	0.002-0.012-0.020	0.002-0.003-0.004
BHC1011		460-590-720	0.002-0.012-0.020	0.002-0.003-0.004
BHC2011		330-460-560	0.002-0.012-0.020	0.002-0.003-0.004
BHC2511		390-490-590	0.002-0.012-0.020	0.002-0.003-0.004
BHC3511		260-390-490	0.002-0.008-0.016	0.002-0.004-0.008
BSC2011		Powder metallurgy and superalloys	330-490-660	0.002-0.006-0.010

C N G A 4 3

1

2

3

4

5

6

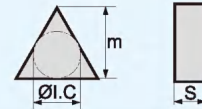
1 Insert shape

Others	Z

2 Clearance angle of main cutting edge

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

3 Tolerance class



Class	Nose height M tolerance (in)	Diameter of IC tolerance (in)	Thickness S tolerance (in)	Class	Nose height M tolerance (in)	Diameter of IC tolerance (in)	Thickness S tolerance (in)
A	±0.0002	±0.0005	±0.0005	J	±0.0002	±0.0032-±0.0051	±0.0010
F	±0.0002	±0.0005	±0.0005	K	±0.0005	±0.0020-±0.0051	±0.0010
C	±0.0005	±0.0010	±0.0005	L	±0.0010	±0.0020-±0.0051	±0.0010
H	±0.0005	±0.0005	±0.0005	M	±0.0032-±0.0071	±0.0020-±0.0051	±0.0051
E	±0.0010	±0.0010	±0.0005	N	±0.0032-±0.0071	±0.0020-±0.0051	±0.0010
G	±0.0010	±0.0010	±0.0051	U	±0.0051-±0.0150	±0.0032-±0.0099	±0.0051

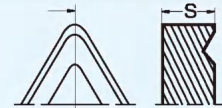
4 Chipbreaker and clamping system

Code	With or without hole	Section plane of insert
N	Without	
B	With	
C	With	
A	With	
W	With	
Q	With	
X	---	special

5 Inscribed circle diameter

Code	Inscribed circle diameter (inch)
2	0.250
3	0.375
4	0.500
5	0.625
6	0.750
8	1.000

6 Insert thickness



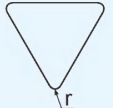
Code	Inscribed radius diameter (inch)
1.5	0.094
2	0.125
2.5	0.156
3	0.187
4	0.250
4.5	0.266
5	0.313
6	0.375

1 A T 012 25 - 2 S

7 8 9 10 11 12 13






A

7 Nose radius

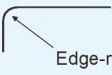
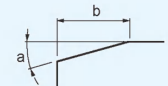
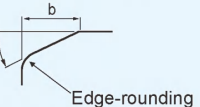
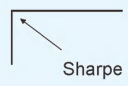


Code	Nose acircle (inch)
X0	0
0	0.008
1	0.016
2	0.031
3	0.047
4	0.063
5	0.079
6	0.094

8 Insert structure code

Code	Radius shape	Illustraion
A	Single-side insert head	
B	Integral insert	
C	All-round	
D	Double-sided chipbreaker	
E	Single-side chipbreaker	

9 Insert edge shape

Code	Radius shape	Illustraion
E	Edge-rounding	
T	Chamfer	
S	Chamfer+edge rounding	
F	Sharpe edge	

10 Chamfer width

Code	000	008	012	017	022
Dimension (in)	--	0.003	0.005	0.007	0.009

11 Chamfer angle

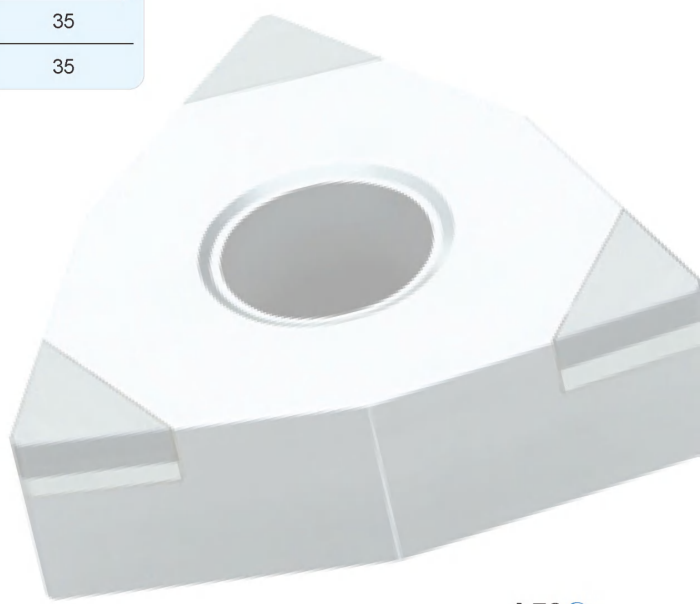
Code	00	15	25	30	35
Angle(°)	--	15	25	30	35

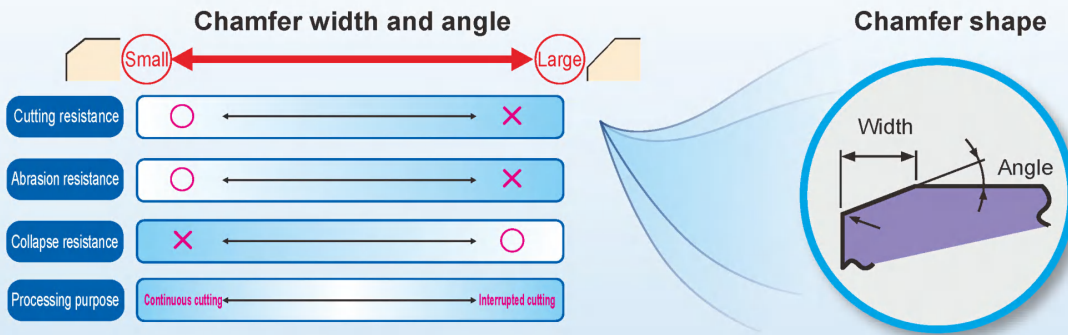
12 Edges No

Code	Without	-2	-3	-4	-6
Number	number 1	number 2	number 3	number 4	number 6

13 Edges length

	Standard edge length	Lengthening edge	Extra edge
Code	Without	S	SS
Length	Standard	+0.04in	+0.08in





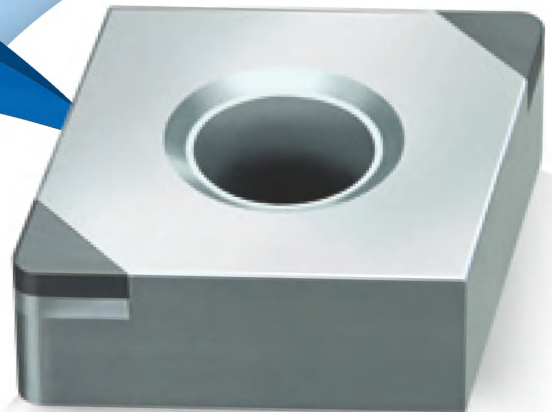
PCBN insert edge specification example

(This table is only a cutting edge example, the specific processing situation may need to be adjusted accordingly.)

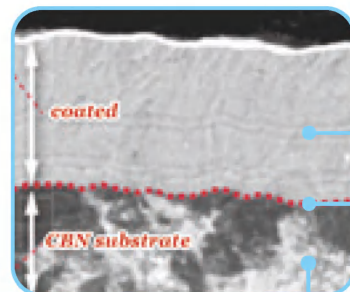
Low cutting resistance	General purpose	High resistance to breakage

Coated PCBN insert

By adopting a combination of a strong CBN substrate and a heat-resistant ceramic coating, developing a brand-new super-hard series products -coated CBN insert, specialized for machining of various type of hardened steel. Compared with the previous uncoated CBN inserts, tool life of coated CBN inserts has been greatly improved.



- High hardness and high heat resistance can achieve long tool life under high-speed cutting condition;
- Effectively restrain the crater wear and achieve stable machining;
- Improved substrate stress, reduce edge chipping and peeling.



- High performance unique ceramic coating
- Firmly bonding force
- High wear resistance and good toughness

PCBN insert application case

Machining differential gear

Workpiece material: carbon steel 20CrMnTi, 58-62HRC
Insert type: VNGA160404
Insert grade: BHC0121
Cutting parameters: $V_c=430\text{SFPM}$; $f=0.004\text{in/r}$; $a_p=0.006\text{in}$
Processing mode: turning the side of the groove
Cooling method: dry cut
Processing requirements: surface finish

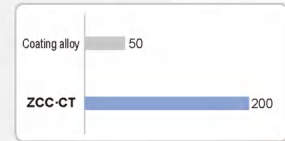


- The processing life is increased by 21%
- Tool cost savings by 42%



Machining brake disc

Workpiece material: gray cast iron
Insert type: DNGN110412
Insert grade: BKC2531
Cutting parameters: $V_c=2560\text{SFPM}$; $f=0.007\text{in/r}$; $a_p=0.008\text{in}$
Processing mode: turning disk surface
Cooling method: dry cut
Processing requirements: surface finish $R_a < 1.6\mu\text{m}$ and size is not out of tolerance

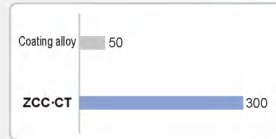


- Tool life is increased by 3 times
- The processing efficiency is increased by 2 times



Machining of cylinder liner

Workpiece material: gray cast iron HT250, HB220
Insert specification: CNGA120416
Insert grade: BK1011
Cutting parameters: $V_c=1970\text{SFPM}$; $f=0.008\text{in/r}$; $a_p=0.006\text{in}$
Processing mode: external turning
Cooling method: wet cutting
Processing requirements: surface finish $R_a < 1.6\mu\text{m}$ and size is not out of tolerance

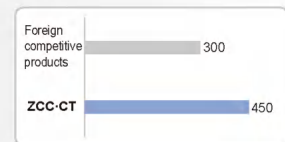


- The tool life is increased 5 times
- The processing efficiency doubled



Machining seal ring

Workpiece material: powder metallurgy 192MR, 280-300HB
Insert specification: CNGA120416
Insert grade: BSC2011
Cutting parameters: $V_c=460\text{SFPM}$; $f=0.001\text{in/r}$; $a_p=0.002\text{in}$
Processing mode: turning inner and outer circles
Cooling method: dry cutting
Processing requirements: surface smoothness $R_a < 0.8\mu\text{m}$
 Dimensions are not out of tolerance

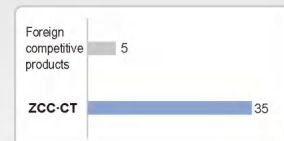


- Increase the processing life by 50%
- Tool cost savings by 110%



Processing of superalloy bar rod

Workpiece material: nickel base alloy Inconel 718, 43-48HRC
Insert specification: VBGW160404
Insert grade: BSC2011
Cutting parameters: $V_c=490\text{SFPM}$ (carbide 100SFPM); $f=0.006\text{in/r}$; $a_p=0.01\text{in}$
Processing mode: external turning
Cooling method: dry cutting
Processing requirements: flank wear value tool is less than or equal to 0.2mm



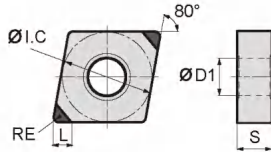
- Tool life increased by 6 times
- Efficiency increased by 5 times



CN

Diamond shape 80° · negative Angle

😊 Good working conditions 😐 General working conditions 😞 Adverse working conditions



Workpiece material	Grade	Good working conditions	General working conditions	Adverse working conditions
H Hardened material		😊	😊	😊
K Cast iron		😊	😊	😊
S Powder metal and superalloys		😊	😊	😊

Type of inserts	Inserts shape	Type	Edge specification	Dimensions(inch)					Grade										
				ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012		
Single-side chipbreaker		CNGA431AE-2	AE	0.5	0.187	0.203	0.0157	0.1063		○	○								
		CNGA432AE-2		0.5	0.187	0.203	0.0315	0.1023		○	○								
		CNGA433AE-2		0.5	0.187	0.203	0.0472	0.0984		○	○								
		CNGA431AS00815-2	S00815	0.5	0.187	0.203	0.0157	0.1063			○				○	○	○		
		CNGA432AS00815-2		0.5	0.187	0.203	0.0315	0.1023			○				○	○	○		
		CNGA433AS00815-2		0.5	0.187	0.203	0.0472	0.0984			○				○	○	○		
		CNGA431AS01225-2	S01225	0.5	0.187	0.203	0.0157	0.1063		○	○	○	○	○	○	○	○	○	○
		CNGA432AS01225-2		0.5	0.187	0.203	0.0315	0.1023		○	○	○	○	○	○	○	○	○	○
		CNGA433AS01225-2		0.5	0.187	0.203	0.0472	0.0984		○	○	○	○	○	○	○	○	○	○
		CNGA431AS01735-2	S01735	0.5	0.187	0.203	0.0157	0.1063			○	○	○	○	○				
		CNGA432AS01735-2		0.5	0.187	0.203	0.0315	0.1023			○	○	○	○	○				
		CNGA433AS01735-2		0.5	0.187	0.203	0.0472	0.0984			○	○	○	○	○				
		CNGA431AT01215-2	T01215	0.5	0.187	0.203	0.0157	0.1063		○	○								
		CNGA432AT01215-2		0.5	0.187	0.203	0.0315	0.1023		○	○								
CNGA433AT01215-2	0.5	0.187		0.203	0.0472	0.0984		○	○										
Double-sided chipbreaker		CNGA431DE-4	DE	0.5	0.187	0.203	0.0157	0.1063		○	○							○	
		CNGA432DE-4		0.5	0.187	0.203	0.0315	0.1023		○	○							○	
		CNGA433DE-4		0.5	0.187	0.203	0.0472	0.0984		○	○							○	
		CNGA431DS00815-4	S00815	0.5	0.187	0.203	0.0157	0.1063							○	○	○	○	
		CNGA432DS00815-4		0.5	0.187	0.203	0.0315	0.1023							○	○	○	○	
		CNGA433DS00815-4		0.5	0.187	0.203	0.0472	0.0984							○	○	○	○	
		CNGA431DS01225-4	S01225	0.5	0.187	0.203	0.0157	0.1063		○	○	○	○	○	○	○	○	○	○
		CNGA432DS01225-4		0.5	0.187	0.203	0.0315	0.1023		○	○	○	○	○	○	○	○	○	○
CNGA433DS01225-4	0.5	0.187		0.203	0.0472	0.0984		○	○	○	○	○	○	○	○	○	○		

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

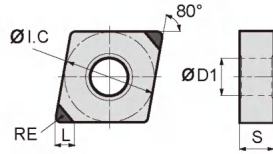
● Always stock available ○ Produce according to order



Applicable tool

CN

Diamond shape 80° · negative Angle



😊 Good working conditions 😐 General working conditions 😞 Adverse working conditions

Workpiece material	Hardened material	Cast iron	Powder metal and superalloys											
H	Hardened material													
K	Cast iron	😊	😊											
S	Powder metal and superalloys	😊	😊											

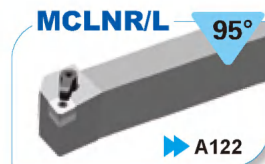


Type of inserts	Inserts shape	Type	Edge specification	Dimensions(inch)					Grade										
				ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012		
Integral insert		CNGN431BE	BE	0.5	0.187		0.0157			○									
		CNGN432BE		0.5	0.187		0.0315			○									
		CNGN433BE		0.5	0.187		0.0472			○									
		CNGN431BS01225	S01225	0.5	0.187		0.0157			○									
		CNGN432BS01225		0.5	0.187		0.0315			○									
		CNGN433BS01225		0.5	0.187		0.0472			○									
Throughout insert		CNGA431CS01225-2	S01225	0.5	0.187	0.203	0.0157	0.1063		○									
		CNGA432CS01225-2		0.5	0.187	0.203	0.0315	0.1023		○									
		CNGA433CS01225-2		0.5	0.187	0.203	0.0472	0.0984		○									

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

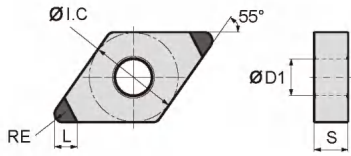
● Always stock available ○ Produce according to order



Applicable tool

DN

Diamond shape 55° · negative Angle



☺ Good working conditions ☹ General working conditions 😞 Adverse working conditions

Workpiece material	Working conditions	Grade
H Hardened material	☹ ☹ ☹ ☹ ☹ ☹	
K Cast iron	☹ ☹ ☹ ☹ ☹ ☹	
S Powder metal and superalloys	☹ ☹ ☹ ☹ ☹ ☹	

Type of inserts	Inserts shape	Type	Edge specification	Dimensions(inch)					Grade											
				ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012			
Single-side chipbreaker		DNGA431AE-2	AE	0.5	0.187	0.203	0.0157	0.1063		○	○							○		
		DNGA432AE-2		0.5	0.187	0.203	0.0315	0.0905		○	○								○	
		DNGA433AE-2		0.5	0.187	0.203	0.0472	0.0866		○	○									
		DNGA441AE-2		0.5	0.25	0.203	0.0157	0.1063		○	○									○
		DNGA442AE-2		0.5	0.25	0.203	0.0315	0.0905		○	○									
		DNGA443AE-2		0.5	0.25	0.203	0.0472	0.0866		○	○									
		DNGA431AS00815-2	S00815	0.5	0.187	0.203	0.0157	0.1063												○
		DNGA432AS00815-2		0.5	0.187	0.203	0.0315	0.0905												○
		DNGA433AS00815-2		0.5	0.187	0.203	0.0472	0.0866												○
		DNGA441AS00815-2		0.5	0.25	0.203	0.0157	0.1063												○
		DNGA442AS00815-2		0.5	0.25	0.203	0.0315	0.0905												○
		DNGA443AS00815-2	0.5	0.25	0.203	0.0472	0.0866													○
		DNGA431AS01225-2	S01225	0.5	0.187	0.203	0.0157	0.1063		○	○	○	○	○	○	○	○	○	○	○
		DNGA432AS01225-2		0.5	0.187	0.203	0.0315	0.0905		○	○	○	○	○	○	○	○	○	○	○
		DNGA433AS01225-2		0.5	0.187	0.203	0.0472	0.0866		○	○	○	○	○	○	○	○	○	○	○
		DNGA441AS01225-2		0.5	0.25	0.203	0.0157	0.1063		○	○	○	○	○	○	○	○	○	○	○
		DNGA442AS01225-2		0.5	0.25	0.203	0.0315	0.0905		○	○	○	○	○	○	○	○	○	○	○
		DNGA443AS01225-2	0.5	0.25	0.203	0.0472	0.0866		○	○	○	○	○	○	○	○	○	○	○	○
		DNGA441AS01735-2	S01735	0.5	0.187	0.203	0.0157	0.1063												○
		DNGA442AS01735-2		0.5	0.187	0.203	0.0315	0.0905												○
		DNGA443AS01735-2		0.5	0.187	0.203	0.0472	0.0866												○

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

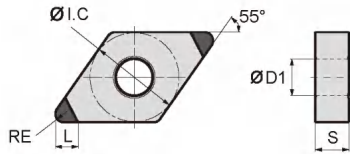
● Always stock available ○ Produce according to order



Applicable tool

DN

Diamond shape 55° · negative Angle



☺ Good working conditions 😐 General working conditions ☹ Adverse working conditions

Workpiece material	Working conditions	Grade
H Hardened material	☹ ☹ ☹ ☹ ☹ ☹	
K Cast iron	☹ ☺	
S Powder metal and superalloys	☹ ☺	



Type of inserts	Inserts shape	Type	Edge specification	Dimensions(inch)					Grade											
				ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012			
Double-sided chipbreaker		DNGA431DE-4	DE	0.5	0.187	0.203	0.0157	0.1063		○	○							○		
		DNGA432DE-4		0.5	0.187	0.203	0.0315	0.0905		○	○								○	
		DNGA433DE-4		0.5	0.187	0.203	0.0472	0.0866		○	○									
		DNGA431DE-4		0.5	0.25	0.203	0.0157	0.1063		○	○									
		DNGA432DE-4		0.5	0.25	0.203	0.0315	0.0905		○	○									
		DNGA433DE-4		0.5	0.25	0.203	0.0472	0.0866		○	○									
		DNGA431DS00815-4	S00815	0.5	0.187	0.203	0.0157	0.1063											○	○
		DNGA432DS00815-4		0.5	0.187	0.203	0.0315	0.0905											○	○
		DNGA433DS00815-4		0.5	0.187	0.203	0.0472	0.0866											○	○
		DNGA441DS00815-4		0.5	0.25	0.203	0.0157	0.1063											○	○
		DNGA442DS00815-4		0.5	0.25	0.203	0.0315	0.0905											○	○
		DNGA443DS00815-4		0.5	0.25	0.203	0.0472	0.0866											○	○
		DNGA431DS01225-4	S01225	0.5	0.187	0.203	0.0157	0.1063			○	○	○	○	○	○	○	○	○	○
		DNGA432DS01225-4		0.5	0.187	0.203	0.0315	0.0905			○	○	○	○	○	○	○	○	○	○
		DNGA433DS01225-4		0.5	0.187	0.203	0.0472	0.0866			○	○	○	○	○	○	○	○	○	○
		DNGA441DS01225-4		0.5	0.187	0.203	0.0157	0.1063			○	○	○	○	○	○	○	○	○	○
		DNGA442DS01225-4		0.5	0.187	0.203	0.0315	0.0905			○	○	○	○	○	○	○	○	○	○
		DNGA443DS01225-4		0.5	0.187	0.203	0.0472	0.0866			○	○	○	○	○	○	○	○	○	○

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

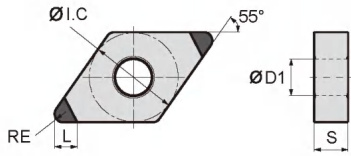
● Always stock available ○ Produce according to order



Applicable tool

DN

Diamond shape 55° · negative Angle



😊 Good working conditions 🙄 General working conditions 😞 Adverse working conditions

Workpiece material	Working conditions	Good	General	Adverse
H Hardened material		😊	🙄	😞
K Cast iron		😊	🙄	😞
S Powder metal and superalloys		😊	🙄	😞

Type of inserts	Inserts shape	Type	Edge specification	Dimensions(inch)					Grade										
				ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012		
Integral insert		DNGN431BS01225	S01225	0.5	0.187		0.0157		○										
		DNGN432BS01225		0.5	0.187		0.0315		○										
		DNGN433BS01225		0.5	0.187		0.0472		○										
		DNGN441BS01225		0.5	0.25		0.0157		○										
		DNGN442BS01225		0.5	0.25		0.0315		○										
		DNGN443BS01225		0.5	0.25		0.0472		○										
Throughout insert		DNGA431CS01225-2	S01225	0.5	0.187	0.203	0.0157	0.1771	○										
		DNGA432CS01225-2		0.5	0.187	0.203	0.0315	0.1614	○										
		DNGA433CS01225-2		0.5	0.187	0.203	0.0472	0.1574	○										
		DNGA441CS01225-2		0.5	0.25	0.203	0.0157	0.1771	○										
		DNGA442CS01225-2		0.5	0.25	0.203	0.0315	0.1614	○										
		DNGA443CS01225-2		0.5	0.25	0.203	0.0472	0.1574	○										

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

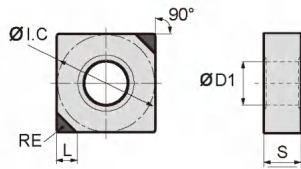
● Always stock available ○ Produce according to order



Applicable tool

SN

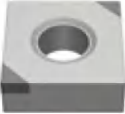
Square 90° · negative Angle



☺ Good working conditions 😐 General working conditions ☹ Adverse working conditions

Workpiece material	Hardened material	Cast iron	Powder metal and superalloys	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012
H	Hardened material			☹	☹	☹	☺	☺	☺	☺	☺	☺
K	Cast iron	☹	☺									
S	Powder metal and superalloys	☹	☺									



Type of inserts	Inserts shape	Type	Edge specification	Dimensions(inch)					Grade										
				ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012		
Single-side chipbreaker		SNGA431AE-2	DE	0.5	0.187	0.203	0.0157	0.1063		○	○						○		
		SNGA432AE-2		0.5	0.187	0.203	0.0315	0.091		○	○							○	
		SNGA433AE-2		0.5	0.187	0.203	0.0472	0.0866		○	○								
		SNGA431DE-4		0.5	0.187	0.203	0.0157	0.1063			○								
		SNGA432DE-4		0.5	0.187	0.203	0.0315	0.091			○								
		SNGA433DE-4		0.5	0.187	0.203	0.0472	0.0866			○								
		SNGA431DS00815-4	S00815	0.5	0.187	0.203	0.0157	0.1063						○	○	○	○		
		SNGA432DS00815-4		0.5	0.187	0.203	0.0315	0.091						○	○	○	○		
		SNGA433DS00815-4		0.5	0.187	0.203	0.0472	0.0866						○	○	○			
		SNGA431AS01225-2	S01225	0.5	0.187	0.203	0.0157	0.1063		○	○								
		SNGA432AS01225-2		0.5	0.187	0.203	0.0315	0.091		○	○								
		SNGA433AS01225-2		0.5	0.187	0.203	0.0472	0.0866		○	○								
		SNGA431DS01225-4		0.5	0.187	0.203	0.0157	0.1063			○	○	○	○	○	○	○	○	
		SNGA432DS01225-4		0.5	0.187	0.203	0.0315	0.091			○	○	○	○	○	○	○	○	
		SNGA433DS01225-4		0.5	0.187	0.203	0.0472	0.0866			○	○	○	○	○	○	○		
		SNGA431DS01735-4	S01735	0.5	0.187	0.203	0.0157	0.1063				○	○	○					
		SNGA432DS01735-4		0.5	0.187	0.203	0.0315	0.091				○	○	○					
		SNGA433DS01735-4		0.5	0.187	0.203	0.0472	0.0866				○	○	○					

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

● Always stock available ○ Produce according to order

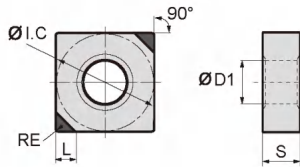


Applicable tool

SN

Square 90° · negative Angle

☺ Good working conditions 😐 General working conditions ☹ Adverse working conditions



Workpiece material	Hardened material	Cast iron	Powder metal and superalloys											
H	Hardened material													
K	Cast iron	☹	☺											
S	Powder metal and superalloys	☹	☺											

Type of inserts	Inserts shape	Type	Edge specification	Dimensions(inch)					Grade										
				ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012		
Double-sided chipbreaker		SNGA431DE-4	DE	0.5	0.187	0.203	0.0157	0.1063		○							○		
		SNGA432DE-4		0.5	0.187	0.203	0.0315	0.091		○								○	
		SNGA433DE-4		0.5	0.187	0.203	0.0472	0.0866		○									
		SNGA431DS00815-4	S00815	0.5	0.187	0.203	0.0157	0.1063											
		SNGA432DS00815-4		0.5	0.187	0.203	0.0315	0.091											
		SNGA433DS00815-4		0.5	0.187	0.203	0.0472	0.0866											
		SNGA431DS01225-4	S01225	0.5	0.187	0.203	0.0157	0.1063		○									
		SNGA432DS01225-4		0.5	0.187	0.203	0.0315	0.091		○									
		SNGA433DS01225-4		0.5	0.187	0.203	0.0472	0.0866		○									
		SNGA431DS01225-8	S01225	0.5	0.187	0.203	0.0157	0.1063					○	○	○	○	○	○	○
		SNGA432DS01225-8		0.5	0.187	0.203	0.0315	0.091					○	○	○	○	○	○	○
		SNGA433DS01225-8		0.5	0.187	0.203	0.0472	0.0866					○	○	○	○	○	○	○

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

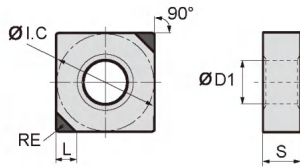
● Always stock available ○ Produce according to order



Applicable tool

SN

Square 90° · negative Angle



☺ Good working conditions 😐 General working conditions ☹ Adverse working conditions

Workpiece material	Working conditions	Working conditions	Working conditions	Working conditions	Working conditions	Working conditions
H Hardened material				☹	☹	☹
K Cast iron	☹	☺				
S Powder metal and superalloys	☹	☺				



Type of inserts	Inserts shape	Type	Edge specification	Dimensions(inch)					Grade									
				ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012	
Integral insert		SNGN431BS01225	S01225	0.5	0.187		0.0157		○									
		SNGN432BS01225		0.5	0.187		0.0315		○									
		SNGN433BS01225		0.5	0.187		0.0472		○									
Throughout insert		SNGA431CS01225-4	S01225	0.5	0.187	0.203	0.0157	0.1771	○									
		SNGA432CS01225-4		0.5	0.187	0.203	0.0315	0.1653	○									
		SNGA433CS01225-4		0.5	0.187	0.203	0.0472	0.1574	○									

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

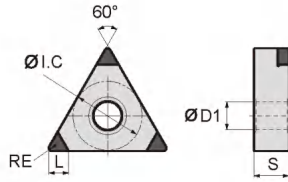
● Always stock available ○ Produce according to order



Applicable tool

TN

Triangle 60° · negative Angle



☺ Good working conditions ☹ General working conditions ☹ Adverse working conditions

Workpiece material	Working conditions	Working conditions	Working conditions	Working conditions	Working conditions	Working conditions	Working conditions
H Hardened material	☹	☹	☹	☺	☺	☺	☺
K Cast iron	☹	☹	☹	☹	☹	☹	☹
S Powder metal and superalloys	☹	☹	☹	☹	☹	☹	☹

Type of inserts	Inserts shape	Type	Edge specification	Dimensions(inch)					Grade											
				ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012			
Single-side chipbreaker		TNGA331AE-3	AE	0.375	0.187	0.15	0.0157	0.1063		○	○							○		
		TNGA332AE-3		0.375	0.187	0.15	0.0315	0.0945		○	○									
		TNGA333AE-3		0.375	0.187	0.15	0.0472	0.0866		○	○									
		TNGA331AS00815-3	S00815	0.375	0.187	0.15	0.0157	0.1063											○	
		TNGA332AS00815-3		0.375	0.187	0.15	0.0315	0.0945											○	
		TNGA333AS00815-3		0.375	0.187	0.15	0.0472	0.0866											○	
		TNGA331AS01225-3	S01225	0.375	0.187	0.15	0.0157	0.1063		○	○	○	○	○	○	○	○	○	○	
		TNGA332AS01225-3		0.375	0.187	0.15	0.0315	0.0945		○	○	○	○	○	○	○	○	○		
		TNGA333AS01225-3		0.375	0.187	0.15	0.0472	0.0866		○	○	○	○	○	○	○	○	○		
		TNGA331AS01735-3	S01735	0.375	0.187	0.15	0.0157	0.1063												
		TNGA332AS01735-3		0.375	0.187	0.15	0.0315	0.0945												
		TNGA333AS01735-3		0.375	0.187	0.15	0.0472	0.0866												
Double-sided chipbreaker		TNGA331DE-6	DE	0.375	0.187	0.15	0.0157	0.1063		○	○									
		TNGA332DE-6		0.375	0.187	0.15	0.0315	0.0945		○	○									
		TNGA333DE-6		0.375	0.187	0.15	0.0472	0.0866		○	○									
		TNGA331DS00815-6	S00815	0.375	0.187	0.15	0.0157	0.1063											○	
		TNGA332DS00815-6		0.375	0.187	0.15	0.0315	0.0945											○	
		TNGA333DS00815-6		0.375	0.187	0.15	0.0472	0.0866											○	
		TNGA331DS01225-6	S01225	0.375	0.187	0.15	0.0157	0.1063		○	○	○	○	○	○	○	○	○	○	
		TNGA332DS01225-6		0.375	0.187	0.15	0.0315	0.0945		○	○	○	○	○	○	○	○	○		
		TNGA333DS01225-6		0.375	0.187	0.15	0.0472	0.0866		○	○	○	○	○	○	○	○	○		

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

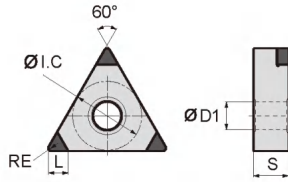
● Always stock available ○ Produce according to order



Applicable tool

TN

Triangle 60° · negative Angle



☺ Good working conditions 😐 General working conditions ☹ Adverse working conditions

Workpiece material	Working conditions	Grade
H Hardened material	☹ ☹ ☹ ☹ ☹ ☹	
K Cast iron	☹ ☺	
S Powder metal and superalloys	☹ ☺	



Type of inserts	Inserts shape	Type	Edge specification	Dimensions(inch)					Grade									
				Ø1.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012	
Integral insert		TNGN331BS01225	S01225	0.375	0.187		0.0157		○									
		TNGN332BS01225		0.375	0.187		0.0315		○									
		TNGN333BS01225		0.375	0.187		0.0472		○									
Throughout insert		TNGA331CS01225-3	S01225	0.375	0.187	0.15	0.0157	0.1772	○									
		TNGA332CS01225-3		0.375	0.187	0.15	0.0315	0.1654	○									
		TNGA333CS01225-3		0.375	0.187	0.15	0.0472	0.1575	○									

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

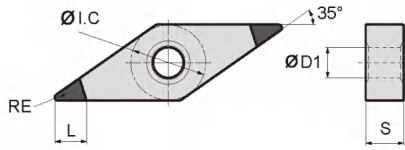
● Always stock available ○ Produce according to order



Applicable tool

VN

Diamond shape 35° · negative Angle



😊 Good working conditions 😐 General working conditions 😞 Adverse working conditions

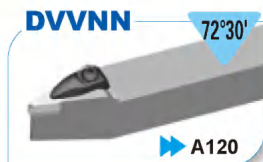
Workpiece material	Condition	Good working conditions	General working conditions	Adverse working conditions
H Hardened material		😊	😊	😊
K Cast iron		😊	😊	😊
S Powder metal and superalloys		😊	😊	😊

Type of inserts	Inserts shape	Type	Edge specification	Dimensions(inch)					Grade									
				ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012	
Single-side chipbreaker		VNGA331AE-2	AE	0.375	0.187	0.15	0.0157	0.1181			○							
		VNGA332AE-2		0.375	0.187	0.15	0.0315	0.1063			○							
		VNGA333AE-2		0.375	0.187	0.15	0.0472	0.0866			○							
		VNGA331AS00815-2	S00815	0.375	0.187	0.15	0.0157	0.1181						○	○	○	○	
		VNGA332AS00815-2		0.375	0.187	0.15	0.0315	0.1063						○	○	○	○	
		VNGA333AS00815-2		0.375	0.187	0.15	0.0472	0.0866						○	○	○	○	
		VNGA331AS01225-2	S01225	0.375	0.187	0.15	0.0157	0.1181			○	○	○	○	○	○	○	
		VNGA332AS01225-2		0.375	0.187	0.15	0.0315	0.1063			○	○	○	○	○	○	○	
		VNGA333AS01225-2		0.375	0.187	0.15	0.0472	0.0866			○	○	○	○	○	○	○	
Double-sided chipbreaker		VNGA331DE-4	DE	0.375	0.187	0.15	0.0157	0.1181			○							
		VNGA332DE-4		0.375	0.187	0.15	0.0315	0.1063			○							
		VNGA333DE-4		0.375	0.187	0.15	0.0472	0.0866			○							
		VNGA331DS00815-4	S00815	0.375	0.187	0.15	0.0157	0.1181						○	○	○	○	
		VNGA332DS00815-4		0.375	0.187	0.15	0.0315	0.1063						○	○	○	○	
		VNGA333DS00815-4		0.375	0.187	0.15	0.0472	0.0866						○	○	○	○	
		VNGA331DS01225-4	S01225	0.375	0.187	0.15	0.0157	0.1181			○	○	○	○	○	○	○	
		VNGA332DS01225-4		0.375	0.187	0.15	0.0315	0.1063			○	○	○	○	○	○	○	
		VNGA333DS01225-4		0.375	0.187	0.15	0.0472	0.0866			○	○	○	○	○	○	○	

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

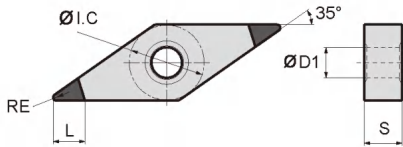
● Always stock available ○ Produce according to order



Applicable tool

VN

Diamond shape 35° · negative Angle



😊 Good working conditions 🙄 General working conditions 😞 Adverse working conditions

Workpiece material	Hardened material	Cast iron	Powder metal and superalloys											
H	Hardened material													
K	Cast iron	😊	😊											
S	Powder metal and superalloys	😊	😊											

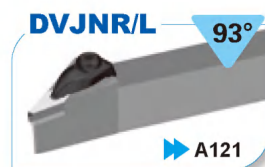
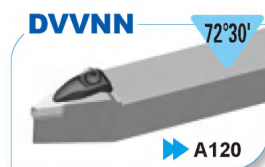


Type of inserts	Inserts shape	Type	Edge specification	Dimensions(inch)					Grade											
				ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012			
Integral insert		VNGN330BS01225	S01225	0.375	0.187		0.0157			○										
		VNGN331BS01225		0.375	0.187		0.0157			○										
		VNGN332BS01225		0.375	0.187		0.0315			○										
		VNGN333BS01225		0.375	0.187		0.0472			○										
Throughout insert		VNGA160402CS01225-2	S01225	0.375	0.187	0.15	0.0157	0.2086		○										
		VNGA331CS01225-2		0.375	0.187	0.15	0.0157	0.1889		○										
		VNGA332CS01225-2		0.375	0.187	0.15	0.0315	0.1771		○										
		VNGA333CS01225-2		0.375	0.187	0.15	0.0472	0.1574		○										

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

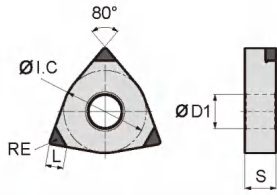
● Always stock available ○ Produce according to order



Applicable tool

WN

Polygon 80° · negative Angle



☺ Good working conditions ☹ General working conditions ☹ Adverse working conditions

Workpiece material	Working conditions	Working conditions	Working conditions	Working conditions	Working conditions	Working conditions
H Hardened material	☹	☹	☹	☺	☺	☺
K Cast iron	☹	☹				
S Powder metal and superalloys	☹	☹				

Type of inserts	Inserts shape	Type	Edge specification	Dimensions (inch)					Grade										
				ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012		
Single-side chipbreaker		WNGA431AE-3	AE	0.5	0.187	0.2031	0.0157	0.1063			○								
		WNGA432AE-3		0.5	0.187	0.2031	0.0315	0.1023			○								
		WNGA433AE-3		0.5	0.187	0.2031	0.0472	0.0984			○								
		WNGA431AS00815-3	S00815	0.5	0.187	0.2031	0.0157	0.1063							○	○	○	○	
		WNGA432AS00815-3		0.5	0.187	0.2031	0.0315	0.1023							○	○	○	○	
		WNGA433AS00815-3		0.5	0.187	0.2031	0.0472	0.0984							○	○	○	○	
		WNGA431AS01225-3	S01225	0.5	0.187	0.2031	0.0157	0.1063				○	○	○	○	○	○	○	○
		WNGA432AS01225-3		0.5	0.187	0.2031	0.0315	0.1023				○	○	○	○	○	○	○	○
		WNGA433AS01225-3		0.5	0.187	0.2031	0.0472	0.0984				○	○	○	○	○	○	○	○
Double-sided chipbreaker		WNGA431DE-6	DE	0.5	0.187	0.2031	0.0157	0.1063		○									
		WNGA432DE-6		0.5	0.187	0.2031	0.0315	0.1023		○									
		WNGA433DE-6		0.5	0.187	0.2031	0.0472	0.0984		○									
		WNGA431DS00815-6	S00815	0.5	0.187	0.2031	0.0157	0.1063							○	○	○	○	
		WNGA432DS00815-6		0.5	0.187	0.2031	0.0315	0.1023							○	○	○	○	
		WNGA433DS00815-6		0.5	0.187	0.2031	0.0472	0.0984							○	○	○	○	
		WNGA431DS01225-6	S01225	0.5	0.187	0.2031	0.0157	0.1063			○								
		WNGA432DS01225-6		0.5	0.187	0.2031	0.0315	0.1023			○								
		WNGA433DS01225-6		0.5	0.187	0.2031	0.0472	0.0984			○								

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

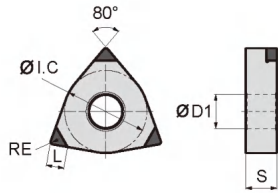
● Always stock available ○ Produce according to order



Applicable tool

WN

Polygon 80° · negative Angle



☺ Good working conditions 😐 General working conditions ☹ Adverse working conditions

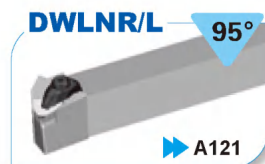
Workpiece material	Working conditions	Grade
H Hardened material	☹ ☹ ☹ ☹ ☹ ☹	
K Cast iron	☹ ☹	
S Powder metal and superalloys	☹ ☹	

Type of inserts	Inserts shape	Type	Edge specification	Dimensions(inch)					Grade									
				ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012	
Integral insert		WNGN431BS01225	S01225	0.5	0.187		0.0157		○									
		WNGN432BS01225		0.5	0.187		0.0315		○									
		WNGN433BS01225		0.5	0.187		0.0472		○									
Throughout insert		WNGA431CS01225-3	S01225	0.5	0.187	0.2031	0.0157	0.0984	○									
		WNGA432CS01225-3		0.5	0.187	0.2031	0.0315	0.0945	○									
		WNGA433CS01225-3		0.5	0.187	0.2031	0.0472	0.0906	○									

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

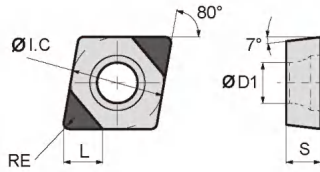
● Always stock available ○ Produce according to order



Applicable tool

CC

Diamond-shaped 80° · positive Angle



☺ Good working conditions ☹ General working conditions ☹ Adverse working conditions

Workpiece material	Working conditions	Working conditions	Working conditions	Working conditions	Working conditions	Working conditions
H Hardened material	☹	☹	☹	☺	☺	☺
K Cast iron	☹	☹				
S Powder metal and superalloys	☹	☹				

Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade										
			ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012		
0° rake angle		CCGW2(1.5)0AE-2-2	0.250	0.094	0.110	0.008	0.099		○	○								
		CCGW2(1.5)1AE-2-2	0.250	0.094	0.110	0.016	0.099		○	○								
		CCGW2(1.5)2AE-2-2	0.250	0.094	0.110	0.032	0.095		○	○								
		CCGW2(1.5)0AS01225-2	0.250	0.094	0.110	0.008	0.099		○	○		○	○	○	○			
		CCGW2(1.5)1AS01225-2	0.250	0.094	0.110	0.016	0.099		○	○		○	○	○	○			
		CCGW2(1.5)2AS01225-2	0.250	0.094	0.110	0.032	0.095		○	○		○	○	○	○			
		CCGW3(2.5)0AE-2-2	0.375	0.156	0.173	0.008	0.099			○								
		CCGW3(2.5)1AE-2-2	0.375	0.156	0.173	0.016	0.099			○								
		CCGW3(2.5)2AE-2-2	0.375	0.156	0.173	0.032	0.095			○								
		CCGW3(2.5)0AS00815-2	0.375	0.156	0.173	0.008	0.099			○								
		CCGW3(2.5)1AS00815-2	0.375	0.156	0.173	0.016	0.099			○								
		CCGW3(2.5)2AS00815-2	0.375	0.156	0.173	0.032	0.095			○								
		CCGW3(2.5)0AS01225-2	0.375	0.156	0.173	0.008	0.099				○		○	○	○	○		
		CCGW3(2.5)1AS01225-2	0.375	0.156	0.173	0.016	0.099				○		○	○	○	○		
		CCGW3(2.5)2AS01225-2	0.375	0.156	0.173	0.032	0.095				○		○	○	○	○		
		CCGW430AE-2-2	0.500	0.188	0.217	0.008	0.099				○							
		CCGW431AE-2	0.500	0.188	0.217	0.016	0.099				○							
		CCGW432AE-2	0.500	0.188	0.217	0.032	0.095				○							
		CCGW430AS01225-2	0.500	0.188	0.217	0.008	0.099					○		○	○	○		
		CCGW431AS01225-2	0.500	0.188	0.217	0.016	0.099					○		○	○	○		
CCGW432AS01225-2	0.500	0.188	0.217	0.032	0.095					○		○	○	○				

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

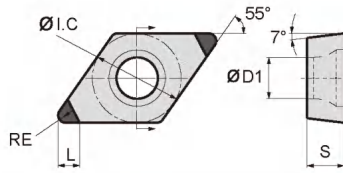
● Always stock available ○ Produce according to order



Applicable tool

DC

Diamond-shaped 55° · positive Angle



☺ Good working conditions ☹ General working conditions ☹ Adverse working conditions

Workpiece material	Working conditions	Working conditions	Working conditions	Working conditions	Working conditions	Working conditions
H Hardened material	☹	☹	☹	☺	☺	☺
K Cast iron	☹	☹				
S Powder metal and superalloys	☹	☹				



Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade											
			ØI.C	S	ØD1	RE	L	BKC2581	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012			
0° rake angle		DCGW2(1.5)0AE-2	0.250	0.094	0.110	0.008	0.106		○										
		DCGW2(1.5)1AE-2	0.250	0.094	0.110	0.016	0.099		○										
		DCGW2(1.5)2AE-2	0.250	0.094	0.110	0.032	0.083		○										
		DCGW2(1.5)0AS00815-2	0.250	0.094	0.110	0.008	0.106							○					
		DCGW2(1.5)1AS00815-2	0.250	0.094	0.110	0.016	0.099							○					
		DCGW2(1.5)2AS00815-2	0.250	0.094	0.110	0.032	0.083							○					
		DCGW2(1.5)0AS01225-2	0.250	0.094	0.110	0.008	0.106			○		○	○	○	○	○	○		
		DCGW2(1.5)1AS01225-2	0.250	0.094	0.110	0.016	0.099			○		○	○	○	○	○	○		
		DCGW2(1.5)2AS01225-2	0.250	0.094	0.110	0.032	0.083			○		○	○	○	○	○	○		
		DCGW3(2.5)0AE-2	0.375	0.156	0.173	0.008	0.106		○	○									
		DCGW3(2.5)1AE-2	0.375	0.156	0.173	0.016	0.099		○	○									
		DCGW3(2.5)2AE-2	0.375	0.156	0.173	0.032	0.083		○	○									
		DCGW3(2.5)0AS00815-2	0.375	0.156	0.173	0.008	0.106							○					
		DCGW3(2.5)1AS00815-2	0.375	0.156	0.173	0.016	0.099							○					
		DCGW3(2.5)2AS00815-2	0.375	0.156	0.173	0.032	0.083							○					
		DCGW3(2.5)0AS01225-2	0.375	0.156	0.173	0.008	0.106							○			○		
		DCGW3(2.5)1AS01225-2	0.375	0.156	0.173	0.016	0.099							○			○		
		DCGW3(2.5)2AS01225-2	0.375	0.156	0.173	0.032	0.083							○			○		

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

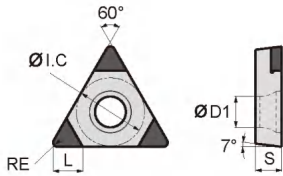
● Always stock available ○ Produce according to order



Applicable tool


TC

Triangle with 60 degrees of positive Angle



☺ Good working conditions ☹ General working conditions ☹ Adverse working conditions

Workpiece material	Hardened material	Cast iron	Powder metal and superalloys	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012
H	☹	☹	☹	☹	☹	☹	☹	☹	☹	☹	☹	☹
K	☹	☹	☹	☹	☹	☹	☹	☹	☹	☹	☹	☹
S	☹	☹	☹	☹	☹	☹	☹	☹	☹	☹	☹	☹

Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade											
			ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012			
0° rake angle		TCGW1.8(1.5)0AE-3	0.219	0.094	0.099	0.008	0.099		○	○									
		TCGW1.8(1.5)1AE-3	0.219	0.094	0.099	0.016	0.099		○	○									
		TCGW1.8(1.5)2AE-3	0.219	0.094	0.099	0.032	0.087		○	○									
		TCGW1.8(1.5)0AS01225-2	0.219	0.094	0.099	0.008	0.099			○		○	○	○	○				
		TCGW1.8(1.5)1AS01225-2	0.219	0.094	0.099	0.016	0.099			○		○	○	○	○				
		TCGW1.8(1.5)2AS01225-2	0.219	0.094	0.099	0.032	0.087			○		○	○	○	○				
		TCGW2(1.5)0AE-3	0.250	0.094	0.110	0.008	0.099		○	○									
		TCGW2(1.5)1AE-3	0.250	0.094	0.110	0.016	0.099		○	○									
		TCGW2(1.5)2AE-3	0.250	0.094	0.110	0.032	0.087		○	○									
		TCGW2(1.5)0AS01225-2	0.250	0.094	0.110	0.008	0.099			○		○	○	○	○				
		TCGW2(1.5)1AS01225-2	0.250	0.094	0.110	0.016	0.099			○		○	○	○	○				
		TCGW2(1.5)2AS01225-2	0.250	0.094	0.110	0.032	0.087			○		○	○	○	○				
		TCGW330AE-3	0.250	0.094	0.110	0.008	0.099		○	○									
		TCGW331AE-3	0.250	0.094	0.110	0.016	0.099		○	○									
		TCGW332AE-3	0.250	0.094	0.110	0.032	0.087		○	○									
		TCGW330AS01225-2	0.250	0.094	0.110	0.008	0.099			○		○	○	○	○				
		TCGW331AS01225-2	0.250	0.094	0.110	0.016	0.099			○		○	○	○	○				
		TCGW332AS01225-2	0.250	0.094	0.110	0.032	0.087			○		○	○	○	○				

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

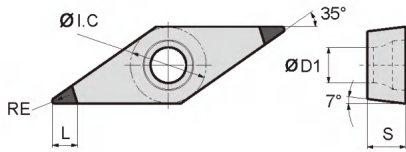
● Always stock available ○ Produce according to order



Applicable tool

VB


Diamond-shaped 35° · positive Angle



😊 Good working conditions 😐 General working conditions 😞 Adverse working conditions

Workpiece material	Good working conditions	General working conditions	Adverse working conditions
H Hardened material	😊	😊	😊
K Cast iron	😊	😊	😊
S Powder metal and superalloys	😊	😊	😊

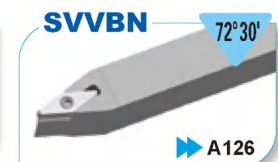


Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade									
			ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012	
0° rake angle		VBGW330AE-2	0.375	0.188	0.173	0.008	0.130		○	○							
		VBGW331AE-2	0.375	0.188	0.173	0.016	0.110		○	○							
		VBGW332AE-2	0.375	0.188	0.173	0.032	0.099		○	○							
		VBGW330AS01225-2	0.375	0.188	0.173	0.008	0.130				○	○	○	○	○	○	
		VBGW331AS01225-2	0.375	0.188	0.173	0.016	0.110				○	○	○	○	○	○	
		VBGW332AS01225-2	0.375	0.188	0.173	0.032	0.099				○	○	○	○	○	○	

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

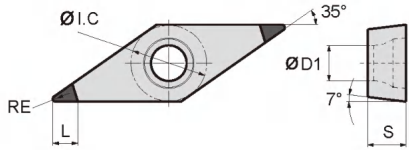
● Always stock available ○ Produce according to order



Applicable tool


VC

Diamond-shaped 35° · positive Angle



😊 Good working conditions 🙄 General working conditions 😞 Adverse working conditions

Workpiece material	Working conditions	Working conditions	Working conditions	Working conditions	Working conditions	Working conditions
H Hardened material	😊	😊	😊	😊	😊	😊
K Cast iron	🙄	😊				
S Powder metal and superalloys	😊	😊				

Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade									
			ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012	
0° rake angle		VCGW330AE-2	0.375	0.188	0.173	0.008	0.130		○	○							
		VCGW331AE-2	0.375	0.188	0.173	0.016	0.110		○	○							
		VCGW332AE-2	0.375	0.188	0.173	0.032	0.099		○	○							
		VCGW330AS00815-2	0.375	0.188	0.173	0.008	0.130						○				
		VCGW331AS00815-2	0.375	0.188	0.173	0.016	0.110						○				
		VCGW332AS00815-2	0.375	0.188	0.173	0.032	0.099						○				
		VCGW330AS01225-2	0.375	0.188	0.173	0.008	0.130			○		○	○	○	○	○	
		VCGW331AS01225-2	0.375	0.188	0.173	0.016	0.110			○		○	○	○	○	○	
		VCGW332AS01225-2	0.375	0.188	0.173	0.032	0.099			○		○	○	○	○	○	

According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

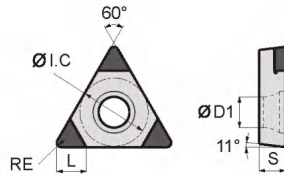
● Always stock available ○ Produce according to order



Applicable tool

TP

Triangle 60° · positive Angle



☺ Good working conditions 😐 General working conditions ☹ Adverse working conditions

Workpiece material	Hardened material	Cast iron	Powder metal and superalloys											
H	Hardened material													
K	Cast iron	☹	☹											
S	Powder metal and superalloys	☹	☹											



Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade											
			ØI.C	S	ØD1	RE	L	BKC2531	BKC1011	BSC2011	BHC3511	BHC2511	BHC2011	BHC1011	BHC0121	BH1012			
0° rake angle		TPGW1.8(1.5)0AE-3	0.219	0.094	0.099	0.008	0.099			○									
		TPGW1.8(1.5)1AE-3	0.219	0.094	0.099	0.016	0.099			○									
		TPGW1.8(1.5)2AE-3	0.219	0.094	0.099	0.032	0.087			○									
		TPGW1.8(1.5)0AS01225-3	0.219	0.094	0.099	0.008	0.099			○		○	○	○	○				
		TPGW1.8(1.5)1AS01225-3	0.219	0.094	0.099	0.016	0.099			○		○	○	○	○				
		TPGW1.8(1.5)2AS01225-3	0.219	0.094	0.099	0.032	0.087			○		○	○	○	○				
		TPGW2(1.5)0AE-3	0.250	0.094	0.110	0.008	0.099		○	○									
		TPGW2(1.5)1AE-3	0.250	0.094	0.110	0.016	0.099		○	○									
		TPGW2(1.5)2AE-3	0.250	0.094	0.110	0.032	0.087		○	○									
		TPGW2(1.5)0AS01225-3	0.250	0.094	0.110	0.008	0.099			○		○	○	○	○				
		TPGW2(1.5)1AS01225-3	0.250	0.094	0.110	0.016	0.099			○		○	○	○	○				
		TPGW2(1.5)2AS01225-3	0.250	0.094	0.110	0.032	0.087			○		○	○	○	○				
		TPGW330AE-3	0.250	0.094	0.110	0.008	0.099		○	○									
		TPGW331AE-3	0.250	0.094	0.110	0.016	0.099		○	○									
		TPGW332AE-3	0.250	0.094	0.110	0.032	0.087		○	○									
		TPGW330AS01225-3	0.250	0.094	0.110	0.008	0.099			○		○	○	○	○				
		TPGW331AS01225-3	0.250	0.094	0.110	0.016	0.099			○		○	○	○	○				
		TPGW332AS01225-3	0.250	0.094	0.110	0.032	0.087			○		○	○	○	○				

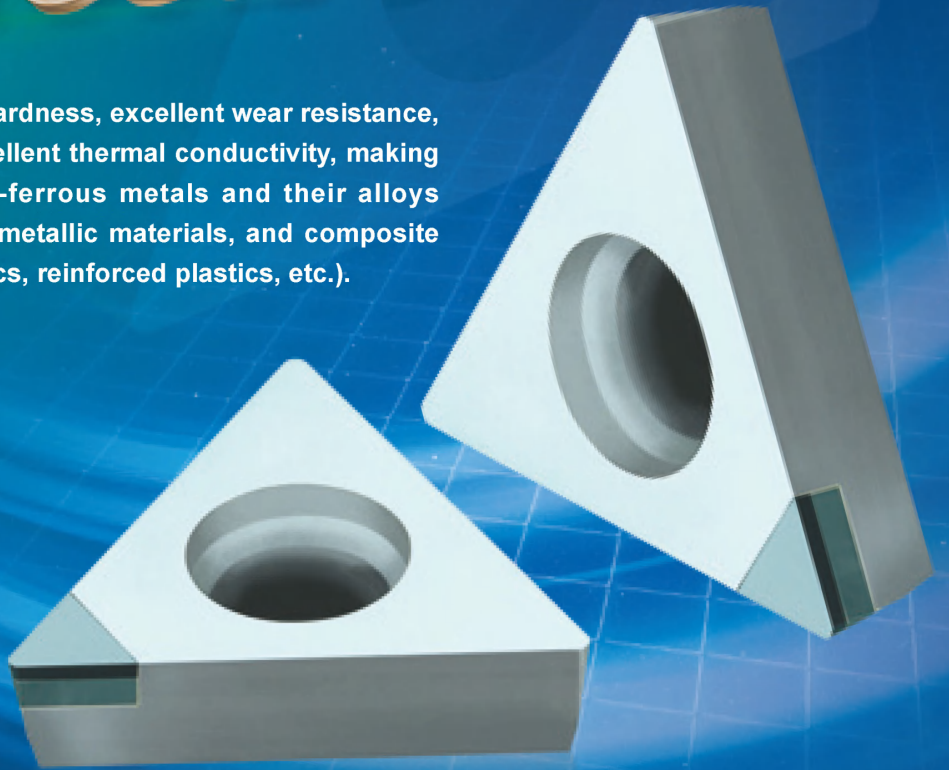
According to machining requirements, we can provide non - standard cutter tip arc size and cutter tip quantity.

When using PCBN inserts, ensure that the cutting depth is less than 0.5mm.

● Always stock available ○ Produce according to order

PCD Tools

PCD materials have high hardness, excellent wear resistance, low friction coefficient, and excellent thermal conductivity, making them suitable for cutting non-ferrous metals and their alloys (such as Cu, Al, Mg, etc.), non-metallic materials, and composite materials (such as MMC, ceramics, reinforced plastics, etc.).



▼ PCD inserts code key





Non ferrous metal machining

DN0121

Ultrafine particle size
Extremely strong cutting edge sharpness and durability

Suitable for application range: Suitable for occasions requiring Bull polishing effect.

DN1011

Fine grained
Good toughness and high wear resistance

Suitable for application range: Good versatility, especially suitable for processing medium to low silicon aluminum alloys, especially suitable for milling.

DN2011

Medium grain size
Good toughness and high wear resistance

Suitable for application range: Good versatility, especially suitable for processing medium to low silicon aluminum alloys, especially suitable for turning.

DN3011

Coarse and fine particle size mixing
Excellent toughness and good thermal stability

Suitable for application range: Suitable for processing MMC, high silicon aluminum alloy, high-strength cast iron, and bimetallic materials.

▲ Recommended cutting parameters

Grade	Processed material	Processing mode	Cutting speed (SFPM)
DN0121	Silicon aluminum alloy (Si content ≤ 12%)	Turning	1640~3280
		Milling	980~4920
	Fiber reinforced composites	Turning/ Milling	660~3280
DN1011	Silicon aluminum alloy (Si content ≤ 12%)	Turning	2950~11480
		Milling	1970~7870
	Metal based composites	Turning/ Milling	4920~5910
	Cu, Mg and their alloys	Turning/ Milling	1310~4130
	Carbide	Turning	70~130
DN2011	Silicon aluminum alloy (Si content ≤ 12%)	Turning	1310~3940
		Milling	820~4590
	Cu, Mg and their alloys	Turning/ Milling	1310~4130
DN3011	Silicon aluminum alloy (Si content ≤ 12%)	Turning	980~2300
		Milling	1640~3280
	Metal based composites	Milling	1640~3280
	Unsintered ceramic materials	Turning	330~660
	Sintered ceramic materials	Turning	70~160
	Bimetallic material	Milling	660~980

C N G A 4 3 1 A F - 2 S

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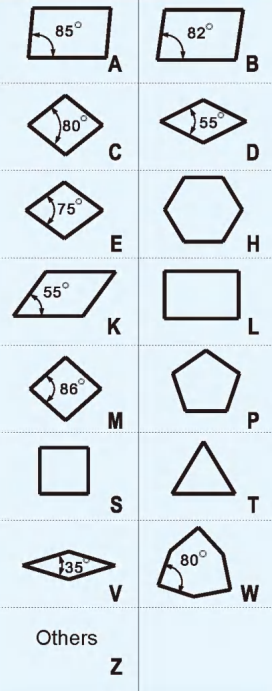
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9

10

11

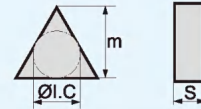
1 Insert shape



2 Clearance angle of main cutting edge

Code	Clearance angle (°)	Code	Clearance angle (°)
A	3°	B	5°
C	7°	D	15°
E	20°	F	25°
G	30°	N	0°
P	11°	O	Other clearance angle

3 Tolerance class



Class	Nose height M Tolerance (in)	Inscribed circle Tolerance (in)	Thickness S Tolerance (in)	Class	Nose height M Tolerance (in)	Inscribed circle Tolerance (in)	Thickness S Tolerance (in)
A	±0.0002	±0.0010	±0.0010	J	±0.0002	±0.0020-±0.0051	±0.0010
F	±0.0002	±0.0005	±0.0010	K	±0.0005	±0.0020-±0.0051	±0.0010
C	±0.0005	±0.0010	±0.0010	L	±0.0010	±0.0020-±0.0051	±0.0010
H	±0.0005	±0.0005	±0.0010	M	±0.0032-±0.0071	±0.0020-±0.0051	±0.0051
E	±0.0010	±0.0010	±0.0010	N	±0.0032-±0.0071	±0.0020-±0.0051	±0.0010
G	±0.0010	±0.0010	±0.0051	U	±0.0051-±0.0150	±0.0032-±0.0099	±0.0051

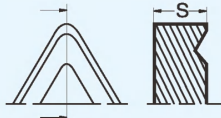
4 Chipbreaker and clamping system

Code	With/Without hole	Section plane of insert
N	Without	
B	With	
C	With	
A	With	
W	With	
Q	With	
X	---	Special

5 Inscribed circle diameter

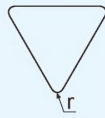
Code	Inscribed circle diameter(inch)
2	0.250
3	0.375
4	0.500
5	0.625
6	0.750
8	1.000

6 Insert thickness



Code	Inscribed radius diameter(inch)
1.5	0.094
2	0.125
2.5	0.156
3	0.187
4	0.250
4.5	0.266
5	0.313
6	0.375

7 Nose radius



Code	Nose acircle (inch)
X0	0
0	0.008
1	0.016
2	0.031
3	0.047
4	0.063
5	0.079
6	0.094

8 Insert Structure

Code	Type of cutting edge	Diagram
A	Single-side insert head	
B	Integral insert	
C	All-round	
D	Double-sided chipbreaker	
E	Single-side chipbreaker	

9 Type of cutting edge

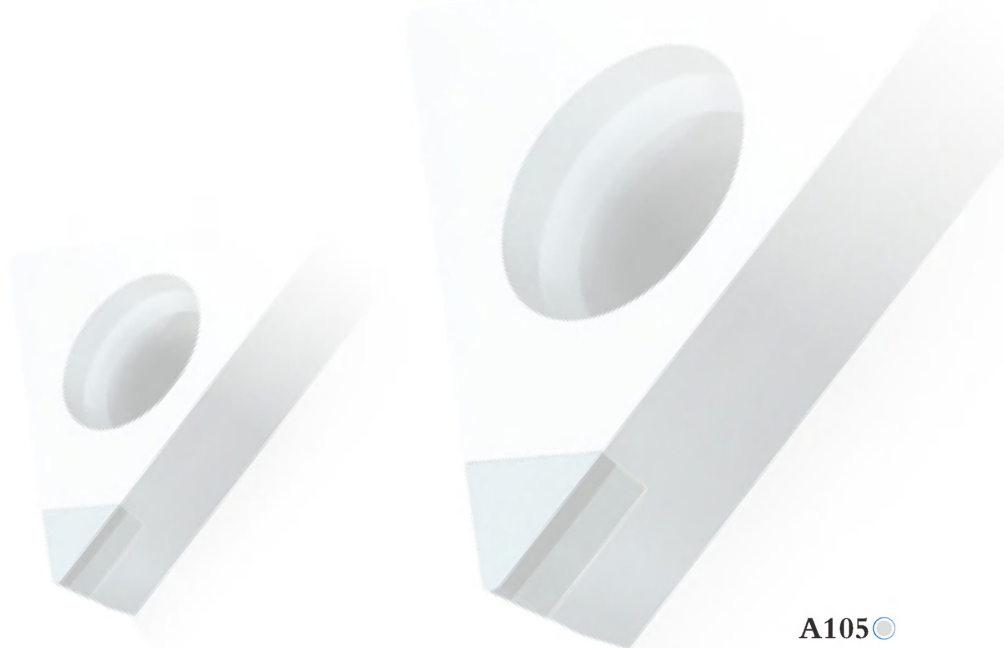
Code	Type of cutting edge	Picture
E	Honing	
T	Chamfering	
S	Chamfering+honing	
F	Sharp edges	

10 Cutting edge number

Code	Without	-2	-3	-4	-6
Number	number1	number2	number3	number4	number6

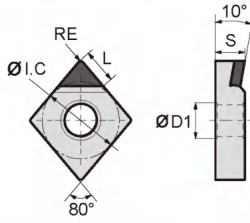
11 The length of cutting edge

	Standard	Elongate	Overlength
Code	Without	-S	-SS
Length	Standard	+0.04in	+0.08in



CN

10° rake angle · negative angle



😊 Good working conditions 😐 General working conditions 😞 Adverse working conditions

Workpiece material	Aluminum silicon alloy	Cast iron	Non-ferrous metal	DN0121	DN0511	DN1011	DN2011	DN3011
S	😊	😊	😊	😊	😊	😊	😊	😊
K	😞	😞	😞	😞	😞	😞	😞	😞
N	😊	😊	😊	😊	😊	😊	😊	😊

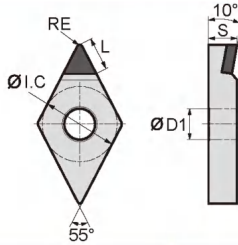
Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
10° rake angle		CNMX430AF-SSS	0.5	0.1874	0.2008	0.0079	0.2283		○			○
		CNMX431AF-SSS	0.5	0.1874	0.2008	0.0157	0.2244		○			○
		CNMX432AF-SSS	0.5	0.1874	0.2008	0.0315	0.2205		○			○

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

● Always stock available ○ Produce according to order

DN

10° rake angle · negative angle



😊 Good working conditions 😐 General working conditions 😞 Adverse working conditions

Workpiece material	Aluminum silicon alloy	Cast iron	Non-ferrous metal	DN0121	DN0511	DN1011	DN2011	DN3011
S	😊	😊	😊	😊	😊	😊	😊	😊
K	😞	😞	😞	😞	😞	😞	😞	😞
N	😊	😊	😊	😊	😊	😊	😊	😊

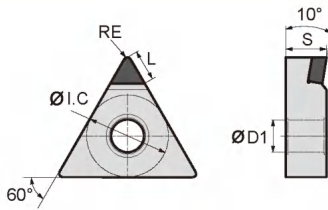
Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
10° rake angle		DNMX430AF-SSS	0.5	0.1874	0.2008	0.0079	0.2323		○			○
		DNMX431AF-SSS	0.5	0.1874	0.2008	0.0157	0.2244		○			○
		DNMX432AF-SSS	0.5	0.1874	0.2008	0.0315	0.2087		○			○
		DNMX433AF-SSS	0.5	0.1874	0.2008	0.0472	0.2047		○			○

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

● Always stock available ○ Produce according to order


TN

10° rake angle · negative angle



😊 Good working conditions 🙄 General working conditions 😞 Adverse working conditions

Workpiece material	Aluminum silicon alloy	Cast iron	Non-ferrous metal	DN0121	DN0511	DN1011	DN2011	DN3011
S	😊	😊	😊	😊	😊	😊	😊	😊
K	😞	😞	😞	😞	😞	😞	😞	😞
N	😊	😊	😊	😊	😊	😊	😊	😊

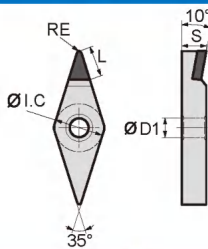
Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
10° rake angle		TNMX330AF-S	0.375	0.1874	0.1874	0.0079	0.1457		○			○
		TNMX331AF-S	0.375	0.1874	0.1874	0.0157	0.1457		○			○
		TNMX332AF-S	0.375	0.1874	0.1874	0.0315	0.1339		○			○

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

● Always stock available ○ Produce according to order


VN

10° rake angle · negative angle



😊 Good working conditions 🙄 General working conditions 😞 Adverse working conditions

Workpiece material	Aluminum silicon alloy	Cast iron	Non-ferrous metal	DN0121	DN0511	DN1011	DN2011	DN3011
S	😊	😊	😊	😊	😊	😊	😊	😊
K	😞	😞	😞	😞	😞	😞	😞	😞
N	😊	😊	😊	😊	😊	😊	😊	😊

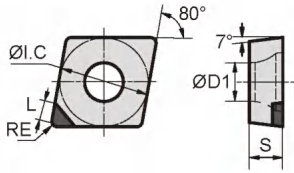
Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
10° rake angle		VNMX330AF-SSS	0.375	0.1874	0.1874	0.0079	0.2559		○			○
		VNMX331AF-SSS	0.375	0.1874	0.1874	0.0157	0.2362		○			○
		VNMX332AF-SSS	0.375	0.1874	0.1874	0.0315	0.2244		○			○
		VNMX333AF-SSS	0.375	0.1874	0.1874	0.0472	0.2047		○			○

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

● Always stock available ○ Produce according to order

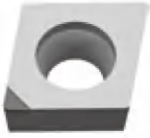
CC 

0° rake angle · positive angle



☺ Good working conditions ☹ General working conditions ☹ Adverse working conditions

Workpiece material	S Aluminum silicon alloy	K Cast iron	N Non-ferrous metal
S	☺	☹	☹
K	☹	☺	☹
N	☹	☹	☺

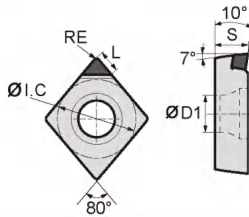
Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
0° rake angle		CCGW2(1.5)0AF	0.25	0.0937	0.1102	0.0078	0.1102	○		○	○	○
		CCGW2(1.5)1AF	0.25	0.0937	0.1102	0.0157	0.1063	○		○	○	○
		CCGW2(1.5)2AF	0.25	0.0937	0.1102	0.0315	0.1024	○		○	○	○
		CCGW3(2.5)0AF	0.375	0.1563	0.1732	0.0078	0.1102	○		○	○	○
		CCGW3(2.5)1AF	0.375	0.1563	0.1732	0.0157	0.1063	○		○	○	○
		CCGW3(2.5)2AF	0.375	0.1563	0.1732	0.0315	0.1024	○		○	○	○
		CCGW430AF	0.5	0.1874	0.2165	0.0078	0.1102	○		○	○	○
		CCGW431AF	0.5	0.1874	0.2165	0.0157	0.1063	○		○	○	○
CCGW432AF	0.5	0.1874	0.2165	0.0315	0.1024	○		○	○	○		

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

● Always stock available ○ Produce according to order


CC 

10° rake angle · positive angle



☺ Good working conditions ☹ General working conditions ☹ Adverse working conditions

Workpiece material	S Aluminum silicon alloy	K Cast iron	N Non-ferrous metal
S	☺	☹	☹
K	☹	☺	☹
N	☹	☹	☺

Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
10° rake angle		CCMX2(1.5)0AF	0.25	0.0937	0.1102	0.0079	0.1102		○			○
		CCMX2(1.5)1AF	0.25	0.0937	0.1102	0.0157	0.1063		○			○
		CCMX3(2.5)0AF	0.375	0.1562	0.1732	0.0079	0.1102		○			○
		CCMX3(2.5)1AF	0.375	0.1562	0.1732	0.0157	0.1063		○			○
		CCMX3(2.5)2AF	0.375	0.1562	0.1732	0.0315	0.1023		○			○
		CCMX430AF	0.5	0.1874	0.2165	0.0079	0.1496		○			○
		CCMX431AF	0.5	0.1874	0.2165	0.0157	0.1457		○			○
		CCMX432AF	0.5	0.1874	0.2165	0.0315	0.1417		○			○

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

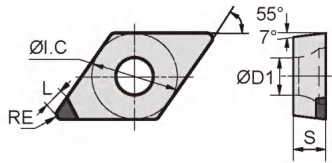
● Always stock available ○ Produce according to order



Applicable tool

DC

0° rake angle · positive angle



😊 Good working conditions 😐 General working conditions 😞 Adverse working conditions

Workpiece material	S	K	N	DN0121	DN0511	DN1011	DN2011	DN3011
Aluminum silicon alloy	😊	😊	😊	😊	😊	😊	😊	😊
Cast iron	😞	😞	😞	😞	😞	😞	😞	😞
Non-ferrous metal	😊	😊	😊	😊	😊	😊	😊	😊

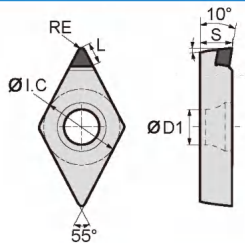
Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
0° rake angle		DCGW2(1.5)0AF	0.25	0.0937	0.1102	0.0078	0.1142	○		○	○	○
		DCGW2(1.5)1AF	0.25	0.0937	0.1102	0.0157	0.1063	○		○	○	○
		DCGW2(1.5)2AF	0.25	0.0937	0.1102	0.0315	0.0905	○		○	○	○
		DCGW3(2.5)0AF	0.375	0.1563	0.1732	0.0078	0.1142	○		○	○	○
		DCGW3(2.5)1AF	0.375	0.1563	0.1732	0.0157	0.1063	○		○	○	○
		DCGW3(2.5)2AF	0.375	0.1563	0.1732	0.0315	0.0905	○		○	○	○

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

● Always stock available ○ Produce according to order

DC

10° rake angle · positive angle



😊 Good working conditions 😐 General working conditions 😞 Adverse working conditions

Workpiece material	S	K	N	DN0121	DN0511	DN1011	DN2011	DN3011
Aluminum silicon alloy	😊	😊	😊	😊	😊	😊	😊	😊
Cast iron	😞	😞	😞	😞	😞	😞	😞	😞
Non-ferrous metal	😊	😊	😊	😊	😊	😊	😊	😊

Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
10° rake angle		DCMX2(1.5)0AF	0.25	0.0937	0.1102	0.0079	0.1142		○			○
		DCMX2(1.5)1AF	0.25	0.0937	0.1102	0.0157	0.1063		○			○
		DCMX2(1.5)2AF	0.25	0.0937	0.1102	0.0315	0.0905		○			○
		DCMX3(2.5)0AF	0.375	0.1562	0.1732	0.0079	0.1142		○			○
		DCMX3(2.5)1AF	0.375	0.1562	0.1732	0.0157	0.1063		○			○
		DCMX3(2.5)2AF	0.375	0.1562	0.1732	0.0315	0.0905		○			○

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

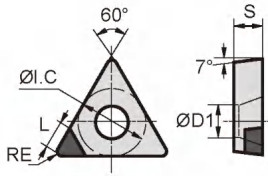
● Always stock available ○ Produce according to order



Applicable tool


TC

0° rake angle · positive angle



😊 Good working conditions 🙄 General working conditions 😞 Adverse working conditions

Workpiece material	Aluminum silicon alloy	Cast iron	Non-ferrous metal	DN0121	DN0511	DN1011	DN2011	DN3011
S	😊	😊	😊	😊	😊	😊	😊	😊
K	😞	😞	😞	😞	😞	😞	😞	😞
N	😊	😊	😊	😊	😊	😊	😊	😊

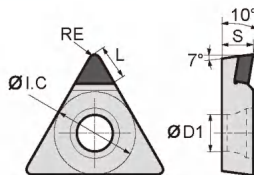
Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
0° rake angle		TCGW1.8(1.5)0AF	0.2189	0.0937	0.0984	0.0078	0.1063	○	○	○	○	○
		TCGW1.8(1.5)1AF	0.2189	0.0937	0.0984	0.0157	0.1063	○	○	○	○	○
		TCGW1.8(1.5)2AF	0.2189	0.0937	0.0984	0.0315	0.0945	○	○	○	○	○
		TCGW2(1.5)0AF	0.25	0.0937	0.1102	0.0078	0.1063	○	○	○	○	○
		TCGW2(1.5)1AF	0.25	0.0937	0.1102	0.0157	0.1063	○	○	○	○	○
		TCGW2(1.5)2AF	0.25	0.0937	0.1102	0.0315	0.0945	○	○	○	○	○

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

● Always stock available ○ Produce according to order


TC

10° rake angle · positive angle



😊 Good working conditions 🙄 General working conditions 😞 Adverse working conditions

Workpiece material	Aluminum silicon alloy	Cast iron	Non-ferrous metal	DN0121	DN0511	DN1011	DN2011	DN3011
S	😊	😊	😊	😊	😊	😊	😊	😊
K	😞	😞	😞	😞	😞	😞	😞	😞
N	😊	😊	😊	😊	😊	😊	😊	😊

Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
10° rake angle		TCMX1.8(1.5)0AF	0.2189	0.0937	0.0984	0.0079	0.1063	○	○	○	○	○
		TCMX1.8(1.5)1AF	0.2189	0.0937	0.0984	0.0157	0.1063	○	○	○	○	○
		TCMX1.8(1.5)2AF	0.2189	0.0937	0.0984	0.0315	0.0945	○	○	○	○	○
		TCMX2(1.5)0AF	0.25	0.0937	0.1102	0.0079	0.1063	○	○	○	○	○
		TCMX2(1.5)1AF	0.25	0.0937	0.1102	0.0157	0.1063	○	○	○	○	○
		TCMX2(1.5)2AF	0.25	0.0937	0.1102	0.0315	0.1063	○	○	○	○	○

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

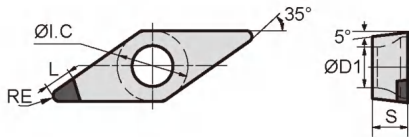
● Always stock available ○ Produce according to order



Applicable tool


VB

0° rake angle · positive angle



😊 Good working conditions 🤔 General working conditions 😞 Adverse working conditions

Workpiece material	S Aluminum silicon alloy	K Cast iron	N Non-ferrous metal	DN0121	DN0511	DN1011	DN2011	DN3011
S Aluminum silicon alloy	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron	😞	😞	😞	😞	😞	😞	😞	😞
N Non-ferrous metal	😊	😊	😊	😊	😊	😊	😊	😊

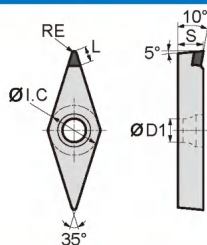
Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
0° rake angle		VBGW330AF	0.375	0.1874	0.1732	0.0078	0.1378	○	○	○	○	○
		VBGW331AF	0.375	0.1874	0.1732	0.0157	0.1181	○	○	○	○	○
		VBGW332AF	0.375	0.1874	0.1732	0.0315	0.1063	○	○	○	○	○

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

● Always stock available ○ Produce according to order


VB

10° rake angle · positive angle



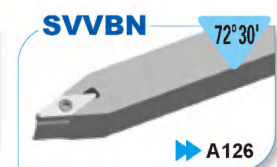
😊 Good working conditions 🤔 General working conditions 😞 Adverse working conditions

Workpiece material	S Aluminum silicon alloy	K Cast iron	N Non-ferrous metal	DN0121	DN0511	DN1011	DN2011	DN3011
S Aluminum silicon alloy	😊	😊	😊	😊	😊	😊	😊	😊
K Cast iron	😞	😞	😞	😞	😞	😞	😞	😞
N Non-ferrous metal	😊	😊	😊	😊	😊	😊	😊	😊

Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
10° rake angle		VBMX330AF	0.375	0.1874	0.1732	0.0079	0.1378	○	○	○	○	
		VBMX331AF	0.375	0.1874	0.1732	0.0157	0.1181	○	○	○	○	
		VBMX332AF	0.375	0.1874	0.1732	0.0315	0.1063	○	○	○	○	

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

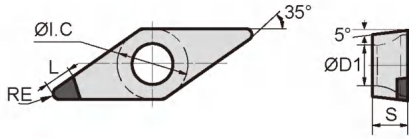
● Always stock available ○ Produce according to order



Applicable tool


VC

0° rake angle · positive angle



😊 Good working conditions 🟡 General working conditions 🟠 Adverse working conditions

Workpiece material	Aluminum silicon alloy	Cast iron	Non-ferrous metal	DN0121	DN0511	DN1011	DN2011	DN3011
S	😊	😊	😊	😊	😊	😊	😊	😊
K	😞	😞	😞	😞	😞	😞	😞	😞
N	😊	😊	😊	😊	😊	😊	😊	😊

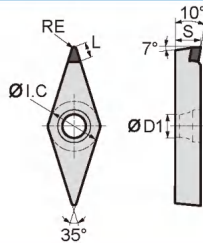
Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
0° rake angle		VCGW330AF	0.375	0.1874	0.1732	0.0078	0.1378	○		○	○	○
		VCGW331AF	0.375	0.1874	0.1732	0.0157	0.1181	○		○	○	○
		VCGW332AF	0.375	0.1874	0.1732	0.0315	0.1063	○		○	○	○

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

● Always stock available ○ Produce according to order


VC

10° rake angle · positive angle



😊 Good working conditions 🟡 General working conditions 🟠 Adverse working conditions

Workpiece material	Aluminum silicon alloy	Cast iron	Non-ferrous metal	DN0121	DN0511	DN1011	DN2011	DN3011
S	😊	😊	😊	😊	😊	😊	😊	😊
K	😞	😞	😞	😞	😞	😞	😞	😞
N	😊	😊	😊	😊	😊	😊	😊	😊

Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
10° rake angle		VCMX22(03)AF	0.25	0.1563	0.1102	0.004	0.1457		○			○
		VCMX220AF	0.25	0.1563	0.1102	0.0079	0.1378		○			○
		VCMX221AF	0.25	0.1563	0.1102	0.0157	0.1181		○			○
		VCMX330AF	0.375	0.1874	0.1732	0.0079	0.1378		○			○
		VCMX331AF	0.375	0.1874	0.1732	0.0157	0.1181		○			○
		VCMX332AF	0.375	0.1874	0.1732	0.0315	0.1063		○			○

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

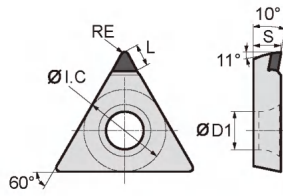
● Always stock available ○ Produce according to order



Applicable tool

TP

10° rake angle · positive angle



☺ Good working conditions ☹ General working conditions ☹ Adverse working conditions

Workpiece material	Aluminum silicon alloy	Cast iron	Non-ferrous metal	DN0121	DN0511	DN1011	DN2011	DN3011
S	☺	☺	☺	☺	☺	☺	☺	☺
K	☹	☹	☹	☹	☹	☹	☹	☹
N	☺	☺	☺	☺	☺	☺	☺	☺

Type of inserts	Inserts shape	Type	Dimensions(inch)					Grade				
			ØI.C	S	ØD1	RE	L	DN0121	DN0511	DN1011	DN2011	DN3011
10° rake angle		TPMX1.8(1.5)0AF	0.2189	0.0937	0.0984	0.0079	0.1063	○	○	○	○	○
		TPMX1.8(1.5)1AF	0.2189	0.0937	0.0984	0.0157	0.1063	○	○	○	○	○
		TPMX1.8(1.5)2AF	0.2189	0.0937	0.0984	0.0315	0.0945	○	○	○	○	○
		TPMX220AF	0.25	0.1563	0.1102	0.0079	0.1063	○	○	○	○	○
		TPMX221AF	0.25	0.1563	0.1102	0.0157	0.1063	○	○	○	○	○
		TPMX222AF	0.25	0.1563	0.1102	0.0315	0.0945	○	○	○	○	○
		TPMX320AF	0.375	0.1563	0.1338	0.0079	0.1063	○	○	○	○	○
		TPMX321AF	0.375	0.1563	0.1338	0.0157	0.1063	○	○	○	○	○
		TPMX322AF	0.375	0.1563	0.1338	0.0315	0.0945	○	○	○	○	○

According to processing requirement, the size and number of non-standard tool nose radius can be provided.

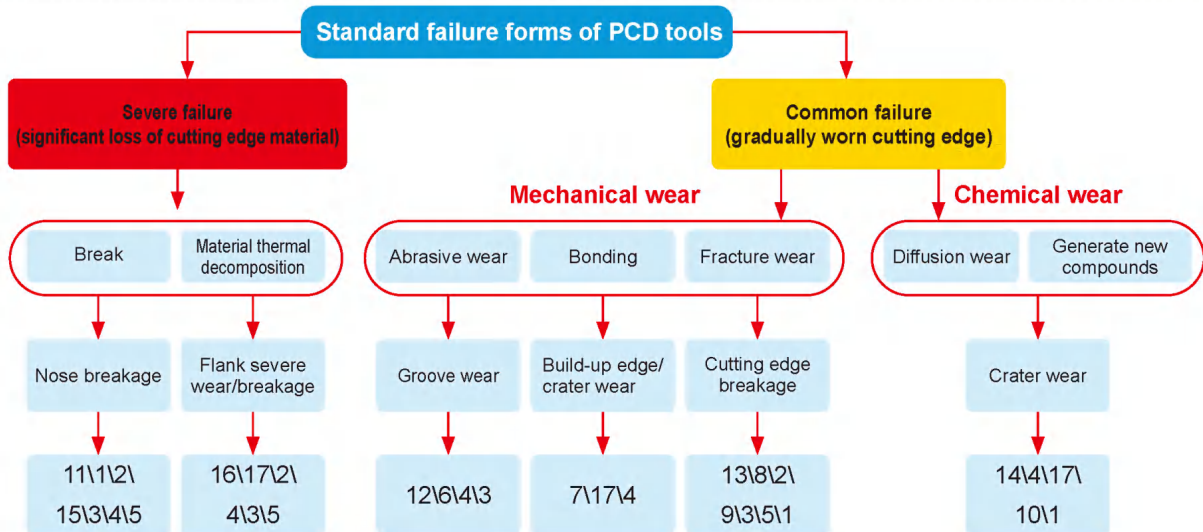
● Always stock available ○ Produce according to order



Common failure forms of PCBN tools

Failure forms	Schematic diagram of failure forms	Failure cause	Solutions
Wear on clearance face		<ul style="list-style-type: none"> • Cutting speed too high • Tool materials is not wear-resistant 	<ul style="list-style-type: none"> • Reduce cutting speed • Select tool materials with good wear resistance
Cutting edge flaking		<ul style="list-style-type: none"> • Tool materials is too brittle • Insufficient strength of tool cutting edge structure • Excessive tool vibration during cutting 	<ul style="list-style-type: none"> • Increase cutting speed • Restructuring to improve cutting edge strength (such as increasing chamfering and increasing nose radius) • Select cutting tool materials with better strength • Improving the stability of tool clamping
Crater wear		<ul style="list-style-type: none"> • Cutting area temperature too high • Chemical reaction occurs between the cutting tool and the workpiece material 	<ul style="list-style-type: none"> • Reduce cutting speed • Select positive rake corner • Select cutting tool materials with better chemical wear resistance
Cutting edge breakage		<ul style="list-style-type: none"> • Tool materials is too brittle • Tools are subjected to excessive load • Insufficient strength of tool cutting edge structure • Inserts size too small 	<ul style="list-style-type: none"> • Reduce feed rate or cutting depth • Restructuring to improve cutting edge strength • Select thicker or larger inserts • Select cutting tool materials with better strength
Thermal cracking		<ul style="list-style-type: none"> • Interrupted cut • Unstable cooling supply 	<ul style="list-style-type: none"> • Turn off unstable cooling supply • Select cutting tool materials with better strength

Common failure forms of PCD tools



- | | | | |
|------------------------------|--|--|---|
| 1. Increase nose radius size | 6. Enlarge clearance angle | 10. Increase lead angle | 15. Increase PCD thickness |
| 2. Reduce clearance angle | 7. Use positive rake angle | 11. Select PCD with better toughness | 16. Select PCD with better thermal stability |
| 3. Reduce feed rate | 8. Passivation treatment of the cutting edge | 12. Select PCD with higher wear resistance | 17. Use coolant, compressed air, or high-pressure cooling |
| 4. Reduce cutting speed | 9. Use negative front corner | 13. Select PCD with high lateral fracture strength | |
| 5. Reduce cutting depth | | 14. Select PCD with strong chemical inertness | |

● PCBN material comparison table

Workpiece material	ISO usage scope	ZCC-CT	SUMITOMO	TUNGALOY	KYOCERA	SECO	SANDVIK
K	K01-K10	BKC1011 BK1011 BK1021	BN7000 BN500	BX910 BX930	KBN475 KBN60M	CBN200	CB50 CB7525
	K20	BKC2531 BK2511 BK2541	BN7000 BNS800	BX480 BX90S	KBN900	CBN300 CBN350	CB7925
	K25						
H	H01	BHC0121 BH0121	BNC2010 BNC100	KBN05M KBN510	BXM10 BX310	CH0550 CBN050C	CB7105
	H10	BHC1011 BH1020	BNC2020 BNC160 BN1000	KBN10M KBN525	BX330 BXC30	CBN060K CBN100	CB7115 CB7025 CB7015
	H20-H25	BHC2011 BH2011 BHC2511 BH2511	BNC200 BN2000	KBN25M	BXA20 BXM20 BX360	CH2540 CBN150	CB7125
	H35	BHC3511 BH3511	BNC300 BN350	KBN35M	BXC50 BX380	CH3515	CB7135 CB7525
S	S20	BSC2011 BS2011	BN500	BX470 BX480	KBN900	CBN300 CBN350	CB7925



● PCD material comparison table

Workpiece material	ISO usage scope	ZCC-CT	SUMITOMO	TUNGALOY	KYOCERA	SECO	SANDVIK
N	N01	DN0121	DA1000 DA90	DX180 DX160	KPD001	PCD05	CD05
	N10	DN1011 DN0511	DA1000 DA150	DX110 DX140	KPD010	PCD10	CD10
	N20	DN2011	DA1000 DA2200	DX110 DX120	KPD230	PCD20	CD1810
	N30	DN3011		DX110		PCD30	