



WORLDIA
股票代码:688028

MN-D2005 EN

PCD Insert

Providing stable , universal , high efficient
cutting effects



WORLDIA MANANOVA

Easy Choice Fast Delivery

ManaNova

An easy choice in cutting world



Contents

ISO Turning 03

Product range overview of indexable inserts
for ISO turning - Inserts description

Chip Control 05

A reliable chip - control solution to help
reducing stringy chipping - MANANOVA

PCD Insert 06

Providing stable , universal , high efficient
cutting effects - MANANOVA EASY CHOICE

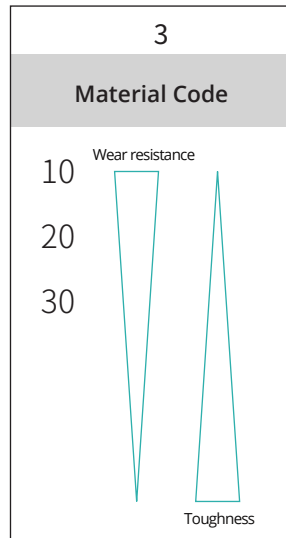
Key Definition - Material designation

Example

M	N	D	10
ManaNova	1	2	3

1
Application Materials
P Steel
M Stainless Steel
K Cast Iron
S Powder metallurgy
H Hardened Steel
N Non-ferrous Metal

2
Cutting Tool Material
D PCD
N CBN



Key Definition - Identification Code

ANSI **C - C C G W 2 1.5 0.5 - 1 N**

ISO **C - C C G W 06 02 02 - 1 N**

1		2	3	4	5	6	7	8		9	10
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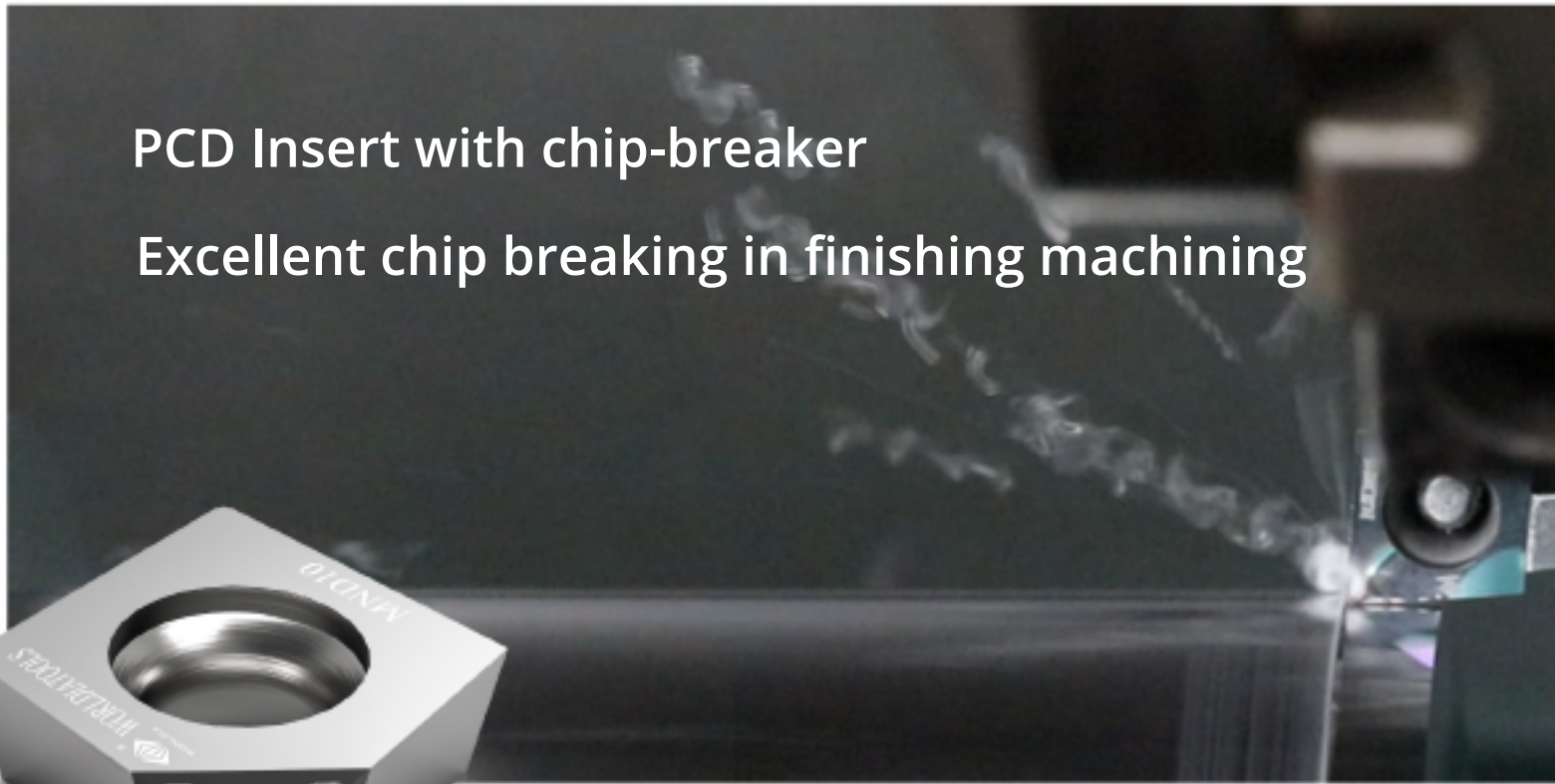
1		2				3				4		5		
Insert Style		Insert Shape				Clearance Angle				Tolerances		Pattern Type		
Without	Standard	A	85°	M	96°	A	3°	F	25°	G	ISO mm	ANSI inch	A	
C	Chip breaker	B	82°	O	135°	B	5°	G	30°	m	±0.025	±0.001	N	
L	Full Length	C	80°	P	108°	C	7°	N	0°	IC	±0.025	±0.001	T	
F	Full Face	D	55°	R	90°	D	15°	P	11°	S	±0.130	±0.005	W	
S	Solid	E	75°	S	90°	E	20°			R	±0.03	±0.001	R	
W	Wiper	H	120°	T	60°									
H	Heavy cutting	K	55°	V	35°									
		L	90°	W	80°									

6							7			8			9		
Inscribed Circle Diameter							Insert Thickness			Nose Radius			Cutting Edges		
IC (mm)	C	D	T	V	W	Code							1	single	
ISO							ISO mm	ANSI	inch	ISO mm	ANSI	inch	2	double	
3.970							01 = 1.59	1	1/16	00 = 0.0	0	.000	3	triple	
4.760			08				02 = 2.38	1.5	3/32	01 = 2.1	0.2	.004	:		
5.560			09				T2 = 2.78			02 = 0.2	0.5	.008	:		
6.350	06	07	11	11			03 = 3.18	2	1/8	04 = 0.4	1	1/64	:		
7.940							T3 = 3.97	2.5	5/32	08 = 0.8	2	1/32	:		
9.525	09	11	16	16			04 = 4.76	3	3/16	12 = 1.2	3	3/64	:		
12.700	12	15			08		05 = 5.56	3.5	7/32	16 = 1.6	4	1/16	:		
15.875							06 = 6.35	4	1/4	20 = 2.0	5	5/64	:		
							07 = 7.94	5	5/16	24 = 2.4	6	3/32	:		
							09 = 9.525	6	3/8	28 = 2.8	7	7/64	:		

10	
Cutting Direction	
N	
R	
L	

PCD Insert with chip-breaker

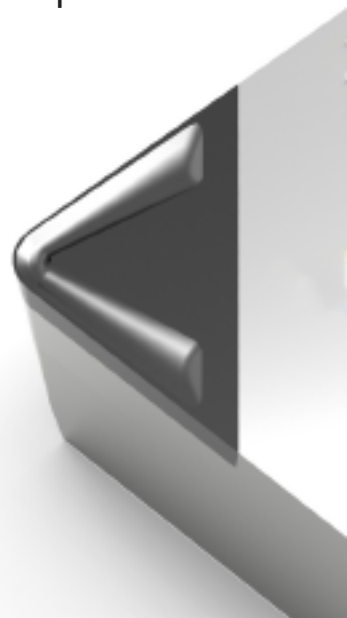
Excellent chip breaking in finishing machining



Material: A6061

Cutting conditions: $V_c=400\text{m/min}$ $f=0.1\text{mm/rev}$ $a_p=0.2\text{mm}$

Insert type: CCGW09T308



PCD Insert

CCGW

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CC

80°Positive

7°Relief

Edge mark:

C - chipbreaker
L - full length
F - full face

Application:

ISO N - Non-ferrous Metal
ISO O - Others

• WORLDIA Stocked Item

CCGW	Angle		Dimensions						Grade			
	ANSI Code	ISO Code	Tips	IC mm	S mm	R mm	φd mm	LE mm	MND 01	MND 10	MND 32	CVD
	CCGW 21.50.5	CCGW 060202	1N	6.35	2.38	0.2	2.8	2.5	•			
	CCGW 21.51	CCGW 060204	1N	6.35	2.38	0.4	2.8	2.5	•			
	CCGW21.52	CCGW 060208	1N	6.35	2.38	0.8	2.8	2.5	•			
	CCGW 32.50.5	CCGW 09T302	1N	9.525	3.97	0.2	4.4	2.5	•			
	CCGW 32.51	CCGW 09T304	1N	9.525	3.97	0.4	4.4	2.5	•			
	CCGW 32.51	CCGW 09T304	1N	9.525	3.97	0.4	4.4	4.4	•			
	CCGW 32.52	CCGW 09T308	1N	9.525	3.97	0.8	4.4	2.5	•			
	CCGW 32.52	CCGW 09T308	1N	9.525	3.97	0.8	4.4	4.4	•			
	CCGW431	CCGW120404	1N	12.7	4.76	0.4	5.5	2.5	•			
	CCGW432	CCGW120408	1N	12.7	4.76	0.8	5.5	2.5	•			
	C - CCGW 21.50.5	C - CCGW 060202	1N	6.35	2.38	0.2	2.8	2.5	•			
	C - CCGW 32.51	C - CCGW 09T304	1N	9.525	3.97	0.4	4.4	2.5	•			
	F - CCGW 21.51	F - CCGW 060204	2N	6.35	2.38	0.4	2.8	6.4	•			

PCD Insert

CCGT

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CC 80°Positive
7°Relief

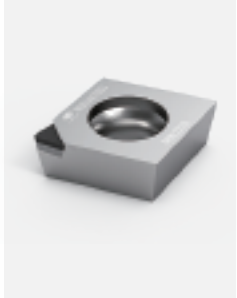
Edge mark:

C - chipbreaker
L - full length
F - full face

Application:

ISO N - Non-ferrous Metal
ISO O - Others

• WORLDIA Stocked Item

CCGT	Angle		Dimensions						Grade			
	ANSI Code	ISO Code	Tips	IC mm	S mm	R mm	Φd mm	LE mm	MND 01	MND 10	MND 32	CVD
	CCGT 21.50.5	CCGT 060202	1N	6.35	2.38	0.2	2.8	2.5	•			
	CCGT 21.51	CCGT 060204	1N	6.35	2.38	0.4	2.8	2.5	•			
	CCGT 32.50.5	CCGT 09T302	1N	9.525	3.97	0.2	4.4	2.5	•			
	CCGT 32.51	CCGT 09T304	1N	9.525	3.97	0.4	4.4	2.5	•			
	CCGT 32.52	CCGT 09T308	1N	9.525	3.97	0.8	4.4	2.5	•			

PCD Insert

DCGW-DCGT

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DC

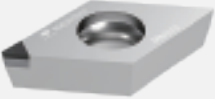
55°Positive

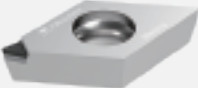
7°Relief

Edge mark:
 C - chipbreaker
 L - full length
 F - full face

Application:
 ISO N - Non-ferrous Metal
 ISO O - Others

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DCGW	Angle		Dimensions						Grade			
	ANSI Code	ISO Code	Tips	IC mm	S mm	R mm	Φd mm	LE mm	MND 01	MND 10	MND 32	CVD
	DCGW 21.50.5	DCGW 070202	1N	6.35	2.38	0.2	2.8	2.5	•			
	DCGW 21.51	DCGW 070204	1N	6.35	2.38	0.4	2.8	2.5	•			
	DCGW 32.50.5	DCGW 11T302	1N	9.525	3.97	0.2	4.4	2.5	•			
	DCGW 32.51	DCGW 11T304	1N	9.525	3.97	0.4	4.4	2.5	•			
	DCGW 32.52	DCGW 11T308	1N	9.525	3.97	0.8	4.4	2.5	•			

DCGT	Angle		Dimensions						Grade			
	ANSI Code	ISO Code	Tips	IC mm	S mm	R mm	Φd mm	LE mm	MND 01	MND 10	MND 32	CVD
	DCGT 21.50.5	DCGT 070202	1N	6.35	2.38	0.2	2.8	2.5	•			
	DCGT 21.51	DCGT 070204	1N	6.35	2.38	0.4	2.8	2.5	•			
	DCGT 32.50.5	DCGT 11T302	1N	9.525	3.97	0.2	4.4	2.5	•			
	DCGT 32.51	DCGT 11T304	1N	9.525	3.97	0.4	4.4	2.5	•			
	DCGT 32.52	DCGT 11T308	1N	9.525	3.97	0.8	4.4	2.5	•			

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VCGW-VCGT

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VC

35°Positive

7°Relief


Edge mark:


C - chipbreaker
L - full length
F - full face

Application:

ISO N - Non-ferrous Metal
ISO O - Others

• WORLDIA Stocked Item

VCGW	Angle		Dimensions						Grade			
	ANSI Code	ISO Code	Tips	IC mm	S mm	R mm	Φd mm	LE mm	MND 01	MND 10	MND 32	CVD
	VCGW21.51	VCGW 110204	1N	6.35	2.38	0.4	2.8	2.5				
	VCGW 220.5	VCGW 110302	1N	6.35	3.18	0.2	2.8	2.5				
	VCGW 221	VCGW 110304	1N	6.35	3.18	0.4	2.8	2.5				
	VCGW 330.5	VCGW 160402	1N	9.525	4.76	0.2	4.4	2.5				
	VCGW 330.5	VCGW 160402	1N	9.525	4.76	0.2	4.4	4.4				
	VCGW 331	VCGW 160404	1N	9.525	4.76	0.4	4.4	2.5				
	VCGW 331	VCGW 160404	1N	9.525	4.76	0.4	4.4	4.4				
	VCGW 332	VCGW 160408	1N	9.525	4.76	0.8	4.4	2.5				
	VCGW 332	VCGW 160408	1N	9.525	4.76	0.8	4.4	4.4				

VCGT	Angle		Dimensions						Grade			
	ANSI Code	ISO Code	Tips	IC mm	S mm	R mm	Φd mm	LE mm	MND 01	MND 10	MND 32	CVD
	VCGT 220.5	VCGT 110302	1N	6.35	3.18	0.2	2.8	2.5				
	VCGT 221	VCGT 110304	1N	6.35	3.18	0.4	3.3	2.5				
	VCGT 330.5	VCGT 160402	1N	9.525	4.76	0.2	4.4	2.5				
	VCGT 331	VCGT 160404	1N	9.525	4.76	0.4	4.4	2.5				
	VCGT 332	VCGT 160408	1N	9.525	4.76	0.8	4.4	2.5				

PCD Insert

VBGW-VBGT

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VB	35°Positive
	5°Relief


Edge mark:


C - chipbreaker
L - full length
F - full face

Application:

ISO N - Non-ferrous Metal
ISO O - Others

• WORLDIA Stocked Item

VBGW	Angle		Dimensions						Grade			
	ANSI Code	ISO Code	Tips	IC mm	S mm	R mm	Φd mm	LE mm	MND 01	MND 10	MND 32	CVD
	VBGW 330.5	VBGW 160402	1N	9.525	4.76	0.2	4.4	2.5	•			
	VBGW 331	VBGW 160404	1N	9.525	4.76	0.4	4.4	2.5	•			
	VBGW 332	VBGW 160408	1N	9.525	4.76	0.8	4.4	2.5	•			

VBGT	Angle		Dimensions						Grade			
	ANSI Code	ISO Code	Tips	IC mm	S mm	R mm	Φd mm	LE mm	MND 01	MND 10	MND 32	CVD
	VBGT221	VBGT 110304	1N	6.35	3.18	0.4	3.3	2.5	•			
	VBGT 330.5	VBGT 160402	1N	9.525	4.76	0.2	4.4	2.5	•			
	VBGT 331	VBGT 160404	1N	9.525	4.76	0.4	4.4	2.5	•			
	VBGT 332	VBGT 160408	1N	9.525	4.76	0.8	4.4	2.5	•			

PCD Insert

TCGW

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TC 60°Positive
7°Relief

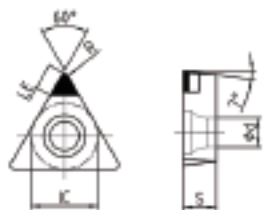


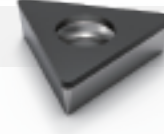
Edge mark:

- C - chipbreaker
- L - full length
- F - full face

Application:

- ISO N - Non-ferrous Metal
- ISO O - Others

• WORLDIA Stocked Item

TCGW	Angle		Dimensions						Grade			
			Tips	IC mm	S mm	R mm	Φd mm	LE mm	MND 01	MND 10	MND 32	CVD
	ANSI Code	ISO Code										
	TCGW 1.81.50.5	TCGW 090202	1N	5.56	2.38	0.2	2.4	2.5				•
	TCGW 1.81.51	TCGW 090204	1N	5.56	2.38	0.4	2.4	2.5				•
	TCGW 220.5	TCGW 110302	1N	6.35	3.18	0.2	2.8	2.5				•
	TCGW 221	TCGW 110304	1N	6.35	3.18	0.4	2.8	2.5				•
	TCGW 222	TCGW 110308	1N	6.35	3.18	0.8	2.8	2.5				•
	TCGW 32.51	TCGW 16T304	1N	9.525	3.97	0.4	4.4	2.5				•
TCGW 32.52	TCGW 16T308	1N	9.525	3.97	0.8	4.4	2.5				•	
	L-TCGW 32.50.5	L-TCGW 16T302	2N	9.525	3.97	0.2	4.4	16.2				•
	L-TCGW 32.51	L-TCGW 16T304	2N	9.525	3.97	0.4	4.4	15.9				•
	L-TCGW 32.52	L-TCGW 16T308	2N	9.525	3.97	0.8	4.4	15.3				•
	F-TCGW 1.81.51	F-TCGW 090204	3N	5.56	2.38	0.4	2.4	9				•

PCD Insert

TCGT

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TC	60°Positive
	7°Relief



Edge mark:

- C - chipbreaker
- L - full length
- F - full face

Application:

- ISO N - Non-ferrous Metal
- ISO O - Others

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TCGT	Angle		Dimensions						Grade			
	ANSI Code	ISO Code	Tips	IC mm	S mm	R mm	Φd mm	LE mm	MND 01	MND 10	MND 32	CVD
	TCGT 1.81.50.5	TCGT 090202	1N	5.56	2.38	0.2	2.4	2.5	•			
	TCGT 1.81.51	TCGT 090204	1N	5.56	2.38	0.4	2.4	2.5	•			
	TCGT 220.5	TCGT 110302	1N	6.35	3.18	0.2	2.8	2.5	•			
	TCGT 221	TCGT 110304	1N	6.35	3.18	0.4	2.8	2.5	•			
	TCGT 222	TCGT 110308	1N	6.35	3.18	0.8	2.8	2.5	•			
	L-TCGT 32.51	L-TCGT 16T304	2N	9.525	3.97	0.4	4.4	15.9	•			

PCD Insert

TPGW-TPGT

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TP

60°Positive

11°Relief

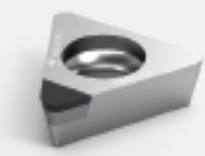
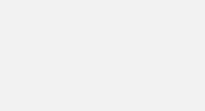

Edge mark:

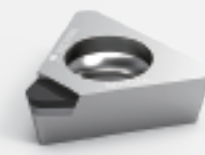
C - chipbreaker
L - full length
F - full face

Application:

ISO N - Non-ferrous Metal
ISO O - Others

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TPGW	Angle		Dimensions						Grade			
	ANSI Code	ISO Code	Tips	IC mm	S mm	R mm	Φd mm	LE mm	MND 01	MND 10	MND 32	CVD
	TPGW 220.5	TPGW 110302	1N	6.35	3.18	0.2	3.3	2.5	•			
	TPGW 221	TPGW 110304	1N	6.35	3.18	0.4	3.3	2.5	•			
	TPGW 222	TPGW 110308	1N	6.35	3.18	0.8	3.3	2.5	•			
	TPGW 330.5	TPGW 160402	1N	9.525	4.76	0.2	4.4	2.5	•			
	TPGW 331	TPGW 160404	1N	9.525	4.76	0.4	4.4	2.5	•			
	F-TPGW 222	F-TPGW 160408	3N	9.525	3.18	0.8	3.3	15.3	•			

TPGT	Angle		Dimensions						Grade			
	ANSI Code	ISO Code	Tips	IC mm	S mm	R mm	Φd mm	LE mm	MND 01	MND 10	MND 32	CVD
	TPGT1.81.51	TPGT090204	1N	5.56	2.38	0.4	2.4	2.5	•			
	TPGT 22.50.5	TPGT 110302	1N	6.35	3.18	0.2	3.3	2.5	•			
	TPGT 22.51	TPGT 110304	1N	6.35	3.18	0.4	3.3	2.5	•			
	TPGT 22.52	TPGT 110308	1N	6.35	3.18	0.8	3.3	2.5	•			
	TPGT 330.5	TPGT 160402	1N	9.525	4.76	0.2	4.4	2.5	•			
TPGT 331	TPGT 160404	1N	9.525	4.76	0.2	4.4	2.5	•				

The relationship between nose radius, feed rate and Ra.

$$\therefore h = r\epsilon - (r\epsilon^2 - (0.5 \times f)^2)^{0.5} = \text{Scallop Height}$$

$$\therefore Ra = (0.25 \sim 0.33) h$$

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

Feed rate recommendation:

Nose radius (mm)	Ra μm					
	0.2	0.4	0.8	1.6	3.2	6.4
	Feed Rate f (mm/rev) \leq					
0.2	0.028	0.040	0.057	0.080	0.113	0.160
0.4	0.040	0.057	0.080	0.113	0.160	0.226
0.8	0.057	0.080	0.113	0.160	0.226	0.320
1.2	0.069	0.098	0.139	0.196	0.277	0.392
1.6	0.080	0.113	0.160	0.226	0.320	0.453
2.4	0.098	0.139	0.196	0.277	0.392	0.554

As a Worldia ManaNova customer

you can get benefit from: Online store service
Local distributor support
Fast delivery

What we focus on is
Maximize the convenience for end users of using the product.



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