

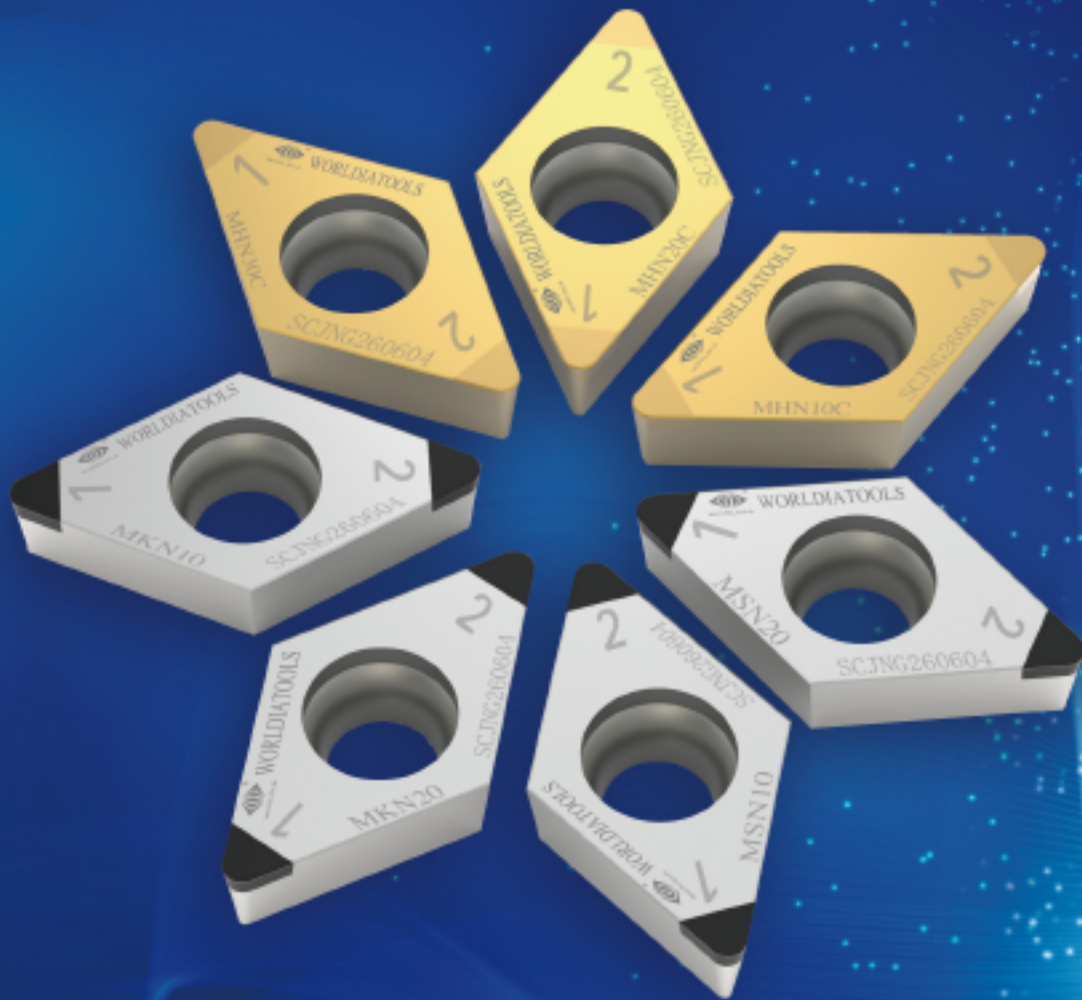


WORLDIA
股票代码:688028

MN-N2006 EN

PCBN Insert

7 material / 1 type, univesal for hardened steel ,
cast Iron , ductile iron and powder metallurgy.



WORLDIA MANANOVA

Easy Choice Fast Delivery

ManaNova

An easy choica in cutting world



Contents

ISO Turning 03

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

PCBN Insert 06

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

Definition Key - Material designation

Example

M	H	N	10	C
ManaNova	1	2	3	4

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 PCBN

3
Material Code
10
20
30

4
Coating
C Coated
Without No coated

Material Introduction - Easy choice for PCBN Grade

ISO H: Hardened Steel

ISO K: Cast Iron

ISO S: Powder Metallurgy






- Continuous cutting
- ◐ Light interrupted cutting
- ◑ Medium interrupted cutting
- ✱ Heavy interrupted cutting






PCBN Grade	ISO H			ISO K		ISO S	
	MHN10C	MHN20C	MHN30C	MKN10	MKN20	MSN10	MSN20
	Smooth	Moderate	Toughness	Cast Iron	Ductile Iron	Powder Metallurgy	Powder Metallurgy
vc	180(150~250) m/min	100(50~150) m/min	80(30~120) m/min	600(300~800) m/min	300(150~450) m/min	300(200~500) m/min	500(300~800) m/min
fn	0.1(0.03~0.2) mm/r	0.1(0.03~0.2) mm/r	0.1(0.03~0.2) mm/r	0.1(0.03~0.3) mm/r	0.1(0.03~0.3) mm/r	0.1(0.03~0.3) mm/r	0.1(0.03~0.3) mm/r
%	45~55	60~70	85~95	85~95	60~70	60~70	85~95
Grain size	1~2 µm	1~2 µm	2~3 µm	2~3 µm	1~2 µm	1~2 µm	2~3 µm
Bond	TiC	TiN	Co/W	Co/W	TiCN	TiCN	Co/W
First Choice	●	◐ ◑ ✱	✱	● ◐ ◑ ✱	● ◐ ◑ ✱	● ◐ ◑ ✱	● ◐ ◑ ✱




- Continuous
- ◐ Light interrupted
- ◑ Medium interrupted
- ✱ Heavy interrupted

Definition Key - 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

1		2				3		4			5			
Insert Style		Insert Shape				Clearance Angle		Tolerances			Pattern Type			
Without	Standard	A	85°	M	86°	A	3°	F	25°	G	ISO mm	ANSI inch	A	
C	Chip breaker	B	82°	O	133°	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						IC (Inch)	ISO mm	ANSI	inch	ISO mm	ANSI	inch	2	double	
3.970						ANSI	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		1/4	03 = 3.18	2	1/8	04 = 0.4	1	1/64	⋮		
7.940						5/16	T3 = 3.97	2.5	5/32	08 = 0.8	2	1/32	⋮		
9.525	09	11	16	16		3/8	04 = 4.76	3	3/16	12 = 1.2	3	3/64	⋮		
12.700	12	15			08	1/2	05 = 5.56	3.5	7/32	16 = 1.6	4	1/16	⋮		
15.875						5/8	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	

PCBN Insert

CCGW

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

CC 80°Positive
7°Relief

Application materia:
H - Hardened Steel
K - Cast Iron
K - Ductile iron(NCI)
S - Powder metallurgy

Symbol mark:
● Continuous
◐ Light interrupted
◑ Medium interrupted
★ Heavy interrupted

CCGW	Shape		Dimensions						Applications							
			Tips	IC mm	S mm	R mm	Φd mm	LE mm	H	H	H	K	K	S	S	
	ANSI Code	ISO Code							Coated	Coated	Coated					
MHN 10C	MHN 20C	MHN 30C	MKN 10	MKN 20	MSN 10	MSN 20										
	CCGW21.50.5	CCGW 060202	2N	6.35	2.38	0.2	2.8	2.2	●	●	●	●	●	●	●	
	CCGW21.51	CCGW 060204	2N	6.35	2.38	0.4	2.8	2.2	●	●	●	●	●	●	●	
	CCGW21.52	CCGW 060208	2N	6.35	2.38	0.8	2.8	2.2	●	●	●	●	●	●	●	
	CCGW32.50.5	CCGW 09T302	2N	9.525	3.97	0.2	4.4	2.2	●	●	●	●	●	●	●	
	CCGW32.51	CCGW 09T304	2N	9.525	3.97	0.4	4.4	2.2	●	●	●	●	●	●	●	
	CCGW32.52	CCGW 09T308	2N	9.525	3.97	0.8	4.4	2.2	●	●	●	●	●	●	●	
	CCGW32.53	CCGW 09T312	2N	9.525	3.97	1.2	4.4	2.2	●	●	●	●	●	●	●	
	CCGW432	CCGW 120408	2N	12.7	4.76	0.8	5.5	2.2	●		●					

use ● symbol for "in stock"

PCBN Insert

CPGW-CNGA



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

CP 80°Positive
11°Relief

Application material:
H - Hardened Steel
K - Cast Iron
K - Ductile iron(NCI)
S - Powder metallurgy

Symbol mark:
● Continuous
◐ Light interrupted
◑ Medium interrupted
⚙ Heavy interrupted

CPGW	Shape		Dimensions						Applications							
	ANSI Code	ISO Code	Tips	IC mm	S mm	R mm	Φd mm	LE mm	H	H	H	K	K	S	S	
									Coated	Coated	Coated					
								MHN 10C	MHN 20C	MHN 30C	MKN 10	MKN 20	MSN 10	MSN 20		

	CPGW21.51	CPGW060204	2N	6.35	2.38	0.4	2.8	2.2				●			
	CPGW21.51	CPGW060204	2N	6.35	2.38	0.4	2.8	2.2							●

MHN Series

MSN Series

CN 80°
Negative

Application material:
H - Hardened Steel
K - Cast Iron
K - Ductile iron(NCI)
S - Powder metallurgy

Symbol mark:
● Continuous
◐ Light interrupted
◑ Medium interrupted
⚙ Heavy interrupted

CNGA	Shape		Dimensions						Applications							
	ANSI Code	ISO Code	Tips	IC mm	S mm	R mm	Φd mm	LE mm	H	H	H	K	K	S	S	
									Coated	Coated	Coated					
								MHN 10C	MHN 20C	MHN 30C	MKN 10	MKN 20	MSN 10	MSN 20		



MHN Series



MKN Series



MSN Series

	CNGA430.5	CNGA 120402	2N	12.7	4.76	0.2	5.16	2.2	●	●					
	CNGA431	CNGA 120404	2N	12.7	4.76	0.4	5.16	2.2	●	●	●	●	●	●	●
	CNGA432	CNGA 120408	2N	12.7	4.76	0.8	5.16	2.2	●	●	●	●	●	●	●
	CNGA432	CNGA 120408	4N	12.7	4.76	0.8	5.16	2.2	●	●	●	●	●	●	●
	CNGA433	CNGA 120412	2N	12.7	4.76	1.2	5.16	2.2	●	●	●	●			
	CNGA434	CNGA 120416	2N	12.7	4.76	1.6	5.16	2.2		●	●				
	CNGA434	CNGA 120416	4N	12.7	4.76	1.6	5.16	2.2		●	●				

use ● symbol for "in stock"

PCBN Insert

DCGW

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

DC

55°Positive



7°Relief


Application materia:

- H - Hardened Steel
- K - Cast Iron
- K - Ductile iron(NCI)
- S - Powder metallurgy

Symbol mark:

- Continuous
- ◐ Light interrupted
- ◑ Medium interrupted
- ⚙ Heavy interrupted

DCGW	Shape		Dimensions						Applications							
	 ANSI Code	 ISO Code	Tips	IC mm	S mm	R mm	Φd mm	LE mm	H	H	H	K	K	S	S	
				Coated		Coated		Coated								
				MHN 10C	MHN 20C	MHN 30C	MKN 10	MKN 20	MSN 10	MSN 20						

 MHN Series	DCGW21.50.5	DCGW070202	2N	6.35	2.38	0.2	2.8	2.2	●	●					●	
	DCGW21.51	DCGW 070204	2N	6.35	2.38	0.4	2.8	2.2	●	●	●	●	●	●	●	●
	DCGW21.52	DCGW 070208	2N	6.35	2.38	0.8	2.8	2.2	●	●	●	●	●	●	●	●
 MKN Series	DCGW32.50.5	DCGW 11T302	2N	9.525	3.97	0.2	4.4	2.2	●	●	●	●	●	●	●	●
	DCGW32.51	DCGW 11T304	2N	9.525	3.97	0.4	4.4	2.2	●	●	●	●	●	●	●	●
	DCGW32.52	DCGW 11T308	2N	9.525	3.97	0.8	4.4	2.2	●	●	●	●	●	●	●	●
 MSN Series	DCGW32.53	DCGW11T312	2N	9.525	3.97	1.2	4.4	2.2	●	●						

use ● symbol for "in stock"

PCBN Insert

DNGA

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

DN **55°**
Negative

Application material:

- H - Hardened Steel
- K - Cast Iron
- K - Ductile iron(NCI)
- S - Powder metallurgy

Symbol mark:

- Continuous
- ◐ Light interrupted
- ◑ Medium interrupted
- ⚙ Heavy interrupted

DNGA	Shape		Dimensions						Applications							
			Tips	IC mm	S mm	R mm	φd mm	LE mm	H	H	H	K	K	S	S	
	ANSI Code	ISO Code							Coated	Coated	Coated					
			MHN 10C	MHN 20C	MHN 30C	MKN 10	MKN 20	MSN 10	MSN 20							
	DNGA431	DNGA 150404	2N	12.7	4.76	0.4	5.16	2.2	●	●	●	●	●	●	●	
	DNGA432	DNGA 150408	2N	12.7	4.76	0.8	5.16	2.2	●	●	●	●	●	●	●	
MHN Series	DNGA432	DNGA 150408	4N	12.7	4.76	0.8	5.16	2.2			●					
	DNGA433	DNGA 150412	2N	12.7	4.76	1.2	5.16	2.2	●	●	●	●	●	●	●	
	DNGA441	DNGA 150604	2N	12.7	6.35	0.4	5.16	2.2	●	●	●	●	●	●	●	
	DNGA441	DNGA 150604	4N	12.7	6.35	0.4	5.16	2.2		●						
MKN Series	DNGA442	DNGA 150608	2N	12.7	6.35	0.8	5.16	2.2	●	●	●	●	●	●	●	
	DNGA443	DNGA150612	4N	12.7	6.35	1.2	5.16	2.2	●							
MSN Series																

use ● symbol for "in stock"

PCBN Insert

TCGW

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

TC

60°Positive






7°Relief

Application materia:

- H - Hardened Steel
- K - Cast Iron
- K - Ductile iron(NCI)
- S - Powder metallurgy

Symbol mark:

- Continuous
- ◐ Light interrupted
- ◑ Medium interrupted
- ⚡ Heavy interrupted

TCGW	Shape		Dimensions						Applications							
			Tips	IC mm	S mm	R mm	Φd mm	LE mm	H	H	H	K	K	S	S	
	ANSI Code	ISO Code							Coated	Coated	Coated					
MHN 10C	MHN 20C	MHN 30C	MKN 10	MKN 20	MSN 10	MSN 20										
	TCGW1.81.50.5	TCGW 090202	3N	5.56	2.38	0.2	2.5	2.2	●							
	TCGW1.81.51	TCGW 090204	3N	5.56	2.38	0.4	2.8	2.2	●	●	●	●	●	●	●	
	TCGW1.81.52	TCGW 090208	3N	5.56	2.38	0.8	2.8	2.2	●	●	●	●	●	●	●	
	TCGW21.51	TCGW 110204	3N	6.35	2.38	0.4	2.8	2.2	●	●	●	●	●	●	●	
	TCGW21.52	TCGW 110208	3N	6.35	2.38	0.8	2.8	2.2	●	●	●	●	●	●	●	
	TCGW221	TCGW 110304	3N	6.35	3.18	0.4	2.8	2.2	●	●	●	●	●	●	●	
	TCGW222	TCGW 110308	3N	6.35	3.18	0.8	2.8	2.2	●	●	●	●	●	●	●	
	TCGW32.5 1	TCGW 16T304	3N	9.525	3.97	0.4	4.4	2.2		●						

use ● symbol for "in stock"

PCBN Insert

TNGA

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TN

60°

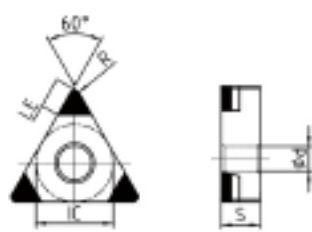
Negative

Application materia:

- H - Hardened Steel
- K - Cast Iron
- K - Ductile iron(NCI)
- S - Powder metallurgy

Symbol mark:

- Continuous
- ◐ Light interrupted
- ◑ Medium interrupted
- ★ Heavy interrupted

TNGA	Shape		Dimensions						Applications							
			Tips	IC mm	S mm	R mm	Φd mm	LE mm	H	H	H	K	K	S	S	
	●	◐							◑	★	●	◐	◑	★	●	◐
	ANSI Code	ISO Code				Coated	Coated	Coated								
								MHN 10C	MHN 20C	MHN 30C	MKN 10	MKN 20	MSN 10	MSN 20		



	TNGA331	TNGA 160404	3N	9.525	4.76	0.4	3.81	2.2	●	●			●		
	TNGA332	TNGA 160408	3N	9.525	4.76	0.8	3.81	2.2	●	●	●	●	●	●	●
	TNGA333	TNGA 160412	3N	9.525	4.76	1.2	3.81	2.2	●	●	●	●	●	●	●
	TNGA334	TNGA 160416	3N	9.525	4.76	1.6	3.81	2.2		●	●				

use ● symbol for "in stock"

PCBN Insert

TPGW

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

TP 60°Positive
11°Relief

Application material:

- H - Hardened Steel
- K - Cast Iron
- K - Ductile iron(NCI)
- S - Powder metallurgy

Symbol mark:

- Continuous
- ◐ Light interrupted
- ◑ Medium interrupted
- ★ Heavy interrupted

TPGW	Shape		Dimensions						Applications							
			Tips	IC mm	S mm	R mm	Φd mm	LE mm	H	H	H	K	K	S	S	
	ANSI Code								ISO Code		Coated	Coated	Coated			
					MHN 10C	MHN 20C	MHN 30C	MKN 10	MKN 20	MSN 10	MSN 20					
	TPGW1.51.50.5	TPGW080202	3N	4.76	2.38	0.2	2.4	2.2	●							
	TPGW1.51.51	TPGW 080204	3N	4.76	2.38	0.4	2.4	2.2	●	●	●	●	●	●	●	
	TPGW1.51.52	TPGW 080208	3N	4.76	2.38	0.8	2.4	2.2	●	●	●	●	●	●	●	
	TPGW1.81.50.5	TPGW 090202	3N	5.56	2.38	0.2	2.8	2.2	●	●	●	●	●		●	
	TPGW1.81.51	TPGW 090204	3N	5.56	2.38	0.4	2.8	2.2	●	●	●	●	●	●	●	
	TPGW21.51	TPGW 110204	3N	6.35	2.38	0.4	2.8	2.2	●	●	●	●	●	●	●	
	TPGW21.52	TPGW 110208	3N	6.35	2.38	0.8	2.8	2.2	●	●	●	●	●	●	●	
	TPGW220.5	TPGW 110302	3N	6.35	3.18	0.2	3.3	2.2	●	●	●	●	●	●	●	
	TPGW221	TPGW 110304	3N	6.35	3.18	0.4	3.3	2.2	●	●	●	●	●	●	●	
	TPGW222	TPGW 110308	3N	6.35	3.18	0.8	2.8	2.2	●	●						

use ● symbol for "in stock"

PCBN Insert

VCGW

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

VC 35°Positive
7°Relief

Application materila:

- H - Hardened Steel
- K - Cast Iron
- K - Ductile iron(NCI)
- S - Powder metallurgy

Symbol mark:

- Continuous
- ◐ Light interrupted
- ◑ Medium interrupted
- ◒ Heavy interrupted

VCGW	Shape		Dimensions						Applications							
			Tips	IC mm	S mm	R mm	φd mm	LE mm	H	H	H	K	K	S	S	
	ANSI Code	ISO Code							Coated	Coated	Coated					
								MHN 10C	MHN 20C	MHN 30C	MKN 10	MKN 20	MSN 10	MSN 20		
	VCGW1.51.50.5	VCGW 080202	2N	4.76	2.38	0.2	2.3	2.2	●	●						
	VCGW1.51.51	VCGW 080204	2N	4.76	2.38	0.4	2.3	2.2	●	●						
	VCGW220.5	VCGW 110302	2N	6.35	3.18	0.2	2.8	2.2	●	●						
	VCGW221	VCGW 110304	2N	6.35	3.18	0.4	2.8	2.2	●	●	●	●	●	●	●	
	VCGW222	VCGW 110308	2N	6.35	3.18	0.8	2.8	2.2	●	●	●	●	●	●	●	
	VCGW330.5	VCGW 160402	2N	9.525	4.76	0.2	4.4	2.2	●	●						
	VCGW331	VCGW 160404	2N	9.525	4.76	0.4	4.4	2.2	●	●	●	●	●	●	●	
	VCGW332	VCGW 160408	2N	9.525	4.76	0.8	4.4	2.2	●	●	●	●	●	●	●	

use ● symbol for "in stock"

PCBN Insert






VBGW

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

VB 35°Positive
5°Relief

Application materia:
 H - Hardened Steel
 K - Cast Iron
 K - Ductile iron(NCI)
 S - Powder metallurgy

Symbol mark:
 ● Continuous
 ◐ Light interrupted
 ◑ Medium interrupted
 ⚙ Heavy interrupted

VBGW	Shape		Dimensions						Applications							
			Tips	IC mm	S mm	R mm	φd mm	LE mm	H	H	H	K	K	S	S	
	ANSI Code	ISO Code							Coated	Coated	Coated					
								MHN 10C	MHN 20C	MHN 30C	MKN 10	MKN 20	MSN 10	MSN 20		
	VBGW220.5	VBGW110302	2N	6.35	3.18	0.2	2.8	2.2	●	●						
	VBGW221	VBGW110304	2N	6.35	3.18	0.4	2.8	2.2	●	●						
	VBGW330.5	VBGW160402	2N	9.525	4.76	0.2	4.4	2.2	●	●	●	●	●	●	●	
	VBGW331	VBGW160404	2N	9.525	4.76	0.4	4.4	2.2	●	●	●	●	●	●	●	
	VBGW332	VBGW160408	2N	9.525	4.76	0.8	4.4	2.2	●	●	●	●	●	●	●	
	VBGW333	VBGW160412	2N	9.525	4.76	1.2	4.4	2.2	●	●	●	●	●	●		

use ● symbol for "in stock"

PCBN Insert

VNGA-MNGA

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

VN

35°

Negative

Application materia:

- H - Hardened Steel
- K - Cast Iron
- K - Ductile iron(NCI)
- S - Powder metallurgy

Symbol mark:

- Continuous
- ⊕ Light interrupted
- ⊞ Medium interrupted
- ⊛ Heavy interrupted

VNGA	Shape		Dimensions						Applications							
			Tips	IC mm	S mm	R mm	Φd mm	LE mm	H	H	H	K	K	S	S	
	ANSI Code	ISO Code							Coated	Coated	Coated	●	⊕	⊞	⊛	⊕
MHN 10C	MHN 20C	MHN 30C	MKN 10	MKN 20	MSN 10	MSN 20										

	VNGA330.5	VNGA 160402	2N	9.525	4.76	0.2	3.81	2.2	●	●	●	●	●	●	●
	VNGA331	VNGA 160404	2N	9.525	4.76	0.4	3.81	2.2	●	●	●	●	●	●	●
	VNGA332	VNGA 160408	2N	9.525	4.76	0.8	3.81	2.2	●	●	●	●	●	●	●
	VNGA333	VNGA 160412	2N	9.525	4.76	1.2	3.81	2.2	●	●	●	●	●	●	●

use ● symbol for "in stock"

WN

80°

Negative

Application materia:

- H - Hardened Steel
- K - Cast Iron
- K - Ductile iron(NCI)
- S - Powder metallurgy

Symbol mark:

- Continuous
- ⊕ Light interrupted
- ⊞ Medium interrupted
- ⊛ Heavy interrupted

WNGA	Shape		Dimensions						Applications							
			Tips	IC mm	S mm	R mm	Φd mm	LE mm	H	H	H	K	K	S	S	
	ANSI Code	ISO Code							Coated	Coated	Coated	●	⊕	⊞	⊛	⊕
MHN 10C	MHN 20C	MHN 30C	MKN 10	MKN 20	MSN 10	MSN 20										

	WNGA431	WNGA 080404	3N	12.7	4.76	0.4	5.16	2.2	●	●	●	●	●	●	●
	WNGA342	WNGA 080408	3N	12.7	4.76	0.8	5.16	2.2	●	●	●	●	●	●	●
	WNGA433	WNGA 080412	3N	12.7	4.76	1.2	5.16	2.2	●	●	●	●	●	●	●

use ● symbol for "in stock"



**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 to use the product.

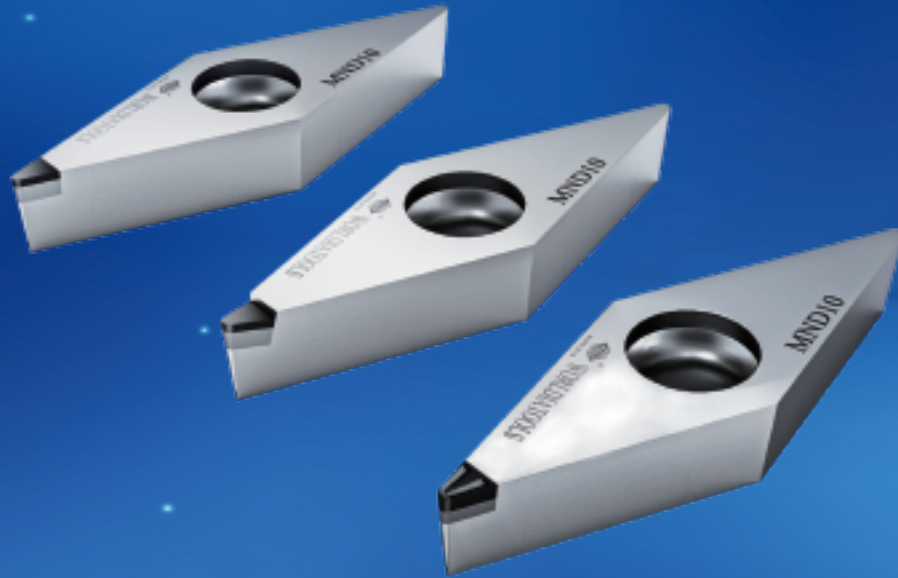
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