

## Features

1. Excellent surface finishing of aluminum, non-ferrous metals and non-metal materials.
2. Longer tool life in high speed machining, due to high wear resistance and excellent thermal conductivity.

Note: Not for use on steel or cast iron



## Grades and Application

	Binder	Diamond size	Grade	Feature and Application
Wear Resistance ↔ Toughness	High Cobalt	10 ~ 25 μm	ID6	Suitable for Al alloy (Si > 12%), Cemented carbide Milling of Al alloy (Interrupted cutting)
		8 ~ 9 μm	ID5	Suitable for Al alloy (Si < 12%), Cu alloy General purpose cutting of non-ferrous metal
		4 ~ 5 μm	ID4	Suitable for FRP, Wood, Pure or near pure Al-Alloy

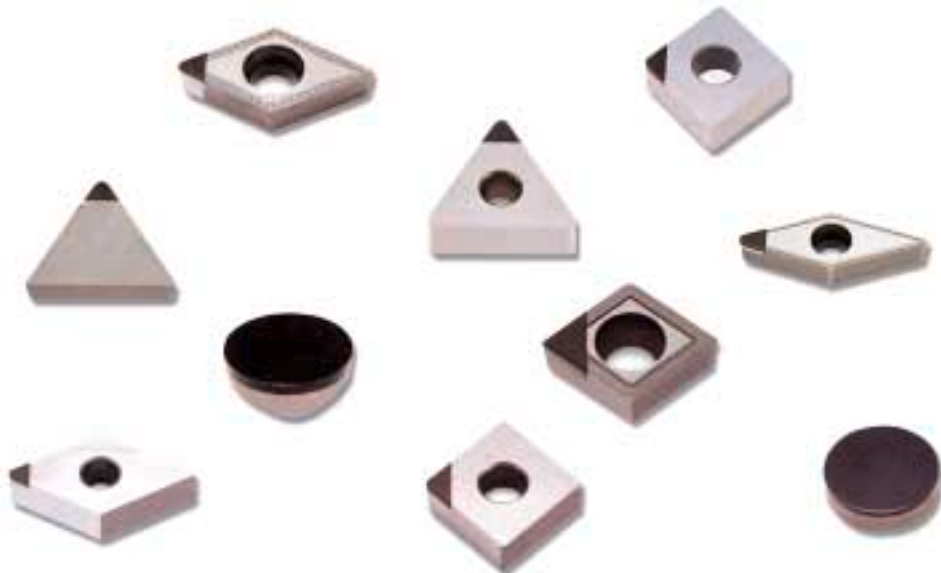
## Recommended Cutting Condition

### Turning

Workpiece	Cutting speed (m/min)	Feed (mm/rev)	Depth of cut (mm)	Grades
Al alloy (4 ~ 9% Si)	800 ~ 2500	0.1 ~ 0.3	0.05 ~ 3.0	ID5
Al alloy (9 ~ 14% Si)	600 ~ 1280	0.1 ~ 0.3		ID5, ID6
Al alloy (16 ~ 18% Si)	300 ~ 600	0.1 ~ 0.3		ID6
Cemented Carbide	20 ~ 40	0.05 ~ 0.2	0.02 ~ 0.5	ID6
Wood	1000 ~ 2500	0.1 ~ 0.5	0.2 ~ 5.0	ID4
Cu alloy	600 ~ 1000	0.05 ~ 0.2	0.05 ~ 3.0	ID5
Plastic, FRP	300 ~ 1000	0.05 ~ 0.25	0.05 ~ 3.0	ID4

### Milling

Workpiece	Cutting speed (m/min)	Feed (mm/tooth)	Depth of cut (mm)	Grades
Al-alloy (Si < 14%)	300 ~ 3000	0.1 ~ 0.2	0.10 ~ 3.0	ID6 Wet cutting
Al-alloy (Si > 15%)	300 ~ 1200			

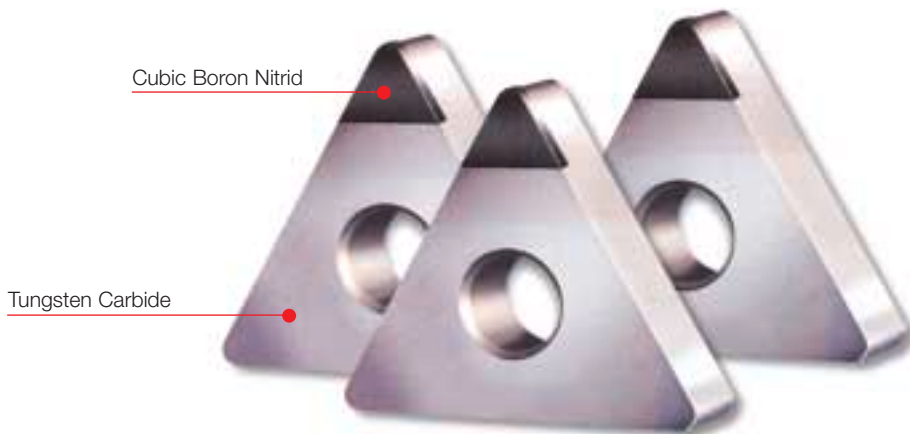


## Features

1. Suitable for difficult-to-cut materials such as sintered metal, hardened steel and super alloys.
2. Saves machining costs and shortens the work cycle by enabling machining of hardened steel.
3. Provides an excellent surface finish.
4. Significant improvement in productivity by high speed machining of hardened steel.
5. Capable of high speed cutting of cast iron.

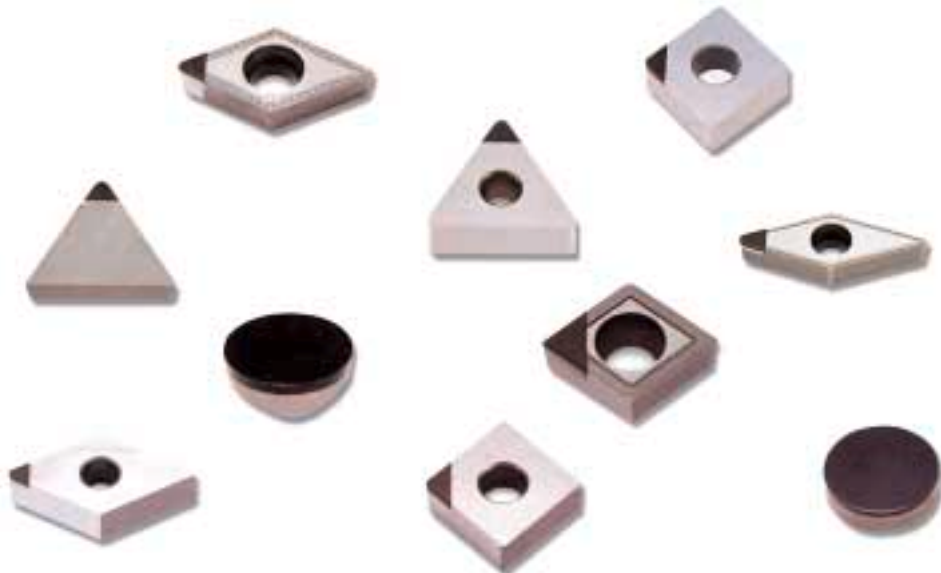
## Grades and Application

Material		Grade	Composition (CBN%)	Feature and Application
Wear Resistance ↑ ↓ Toughness	A. Hardened Steel	IB50	50%	Finishing of hardened steel (HRC 45 ~ 65) Continuous cutting
		IB65	65%	Semi finishing of hardened steel (HRC 45 ~ 65)
	B. Cast Iron & Hard Metal	IB80	80%	Suitable for High-Cr Cast Iron Heavy interrupted cutting of hardened steel (HRC 45 ~ 65)
		IB90	90%	High speed cutting of Cast Iron Cutting Cemented Tungsten Carbide, Sintered metal and Heavy Alloy Interrupted cutting of hardened steel
	A.&B. Roughing	IB90A	80 ~ 90%	High speed cutting of Cast Iron Rough and medium cutting of hardened steel



## Recommended Cutting Condition

Workpiece	Cutting method	Cutting speed (m/min)	Feed Turning (mm/rev) Milling (mm/tooth)	Depth of cut (mm)	Recommended grade
Gray cast iron (180 ~ 230HB)	Turning	400 ~ 1000	0.15 ~ 0.40	0.12 ~ 2.0	IB90, IB80
	Milling	400 ~ 1000	0.15 ~ 0.30	0.20 ~ 2.0	
Chilled cast iron (400HB)	Turning	75 ~ 150	0.15 ~ 0.30	0.12 ~ 2.0	IB90, IB80
	Milling	120 ~ 240	0.15 ~ 0.30	0.20 ~ 2.0	IB90A
Hardened steel (>HRC45)	Rough turning	60 ~ 140	0.15 ~ 0.40	0.70 ~ 2.5	IB90A, IB90, IB80
	Finish turning	100 ~ 140	0.10 ~ 0.20	0.12 ~ 0.75	IB65, IB50
	Milling	120 ~ 240	0.10 ~ 0.25	0.12 ~ 1.0	IB90, IB80, IB65, IB50
Supper alloy (HRC35)	Turning	100 ~ 240	0.05 ~ 0.30	0.10 ~ 2.5	IB90, IB80
	Milling	100 ~ 240	0.10 ~ 0.40	0.10 ~ 1.0	IB90, IB80
Sintered metal	Turning	90 ~ 180	0.05 ~ 0.20	0.10 ~ 1.0	IB90, IB80
	Milling	100 ~ 240	0.05 ~ 0.20	0.10 ~ 1.0	
DCI roll, HSS roll	Turning	45 ~ 60	0.60 ~ 0.80	2.00 ~ 4.0	IB90A



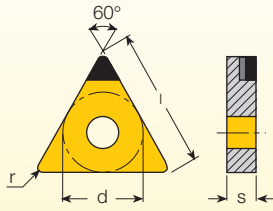
# ISO TURN

## Triangular Inserts

Tolerances (mm)

$d = \pm 0.08$

$s = \pm 0.13$

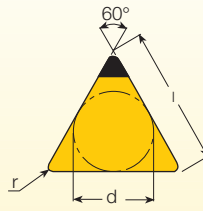


**TNMA**

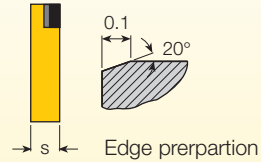
Tolerances (mm)

$d = \pm 0.025$

$s = \pm 0.13$



**TNGN**



Edge preparation

Designation	Dimensions											
	l	d	s	r	IB50	IB65	IB80	IB90	IB90A	ID4	ID5	ID6
<b>TNMA 160404T</b>	16.5	9.52	4.76	0.4	■							
<b>TNMA 160408T</b>	16.5	9.52	4.76	0.8	■			▲				
<b>TNGN 160412T</b>	16.5	9.52	4.76	1.2				▲				

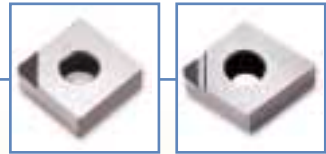
■ Hardened Steel

▲ Cast Iron

● Aluminum Alloy (Si<12%)

# ISO TURN

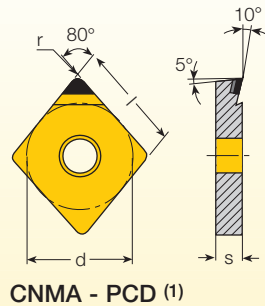
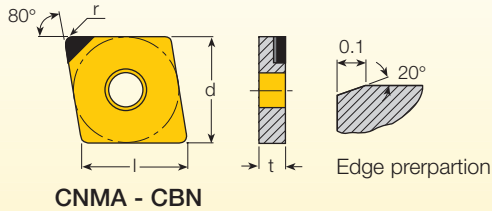
## 80° Rhombic Inserts



Tolerances (mm)

$d = \pm 0.08$

$s = \pm 0.13$



Designation	Dimensions											
	l	d	s	r	IB50	IB65	IB80	IB90	IB90A	ID4	ID5	ID6
<b>CNMA 120404T</b>	12.9	12.7	4.76	0.4	■			▲				
<b>CNMA 120408T</b>	12.9	12.7	4.76	0.8	■			▲				
<b>CNMA 120404(1)</b>	12.9	12.7	4.76	0.4							●	
<b>CNMA 120408(1)</b>	12.9	12.7	4.76	0.8							●	

PCD - Sharp cutting edge

(1) For positive rake other than 10°

add to designation P □ □

For example: CNMA 120404 P15  
will be supplied with 15° rake angle.

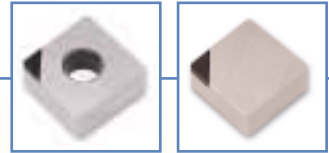
■ Hardened Steel

▲ Cast Iron

● Aluminum Alloy (Si<12%)

# ISO TURN

## Ceramic Square Inserts



Tolerances (mm)

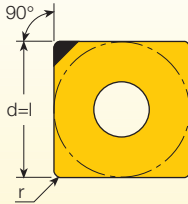
$d = \pm 0.08$

$s = \pm 0.13$

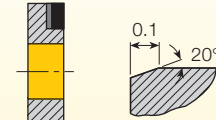
Tolerances (mm)

$d = \pm 0.025$

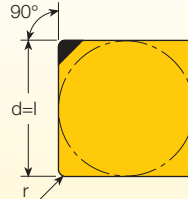
$s = \pm 0.13$



SNMA



Edge preparation



SNGN



Designation	Dimensions											
	l	d	s	r	IB50	IB65	IB80	IB90	IB90A	ID4	ID5	ID6
SNGN 090316T	9.52	9.52	3.17	1.6	■							
SNGN 120408T	12.7	12.7	4.76	0.8				▲				
SNMA 120408T	12.7	12.7	4.76	0.8	■			▲				

■ Hardened Steel

▲ Cast Iron

● Aluminum Alloy (Si<12%)

# ISO TURN

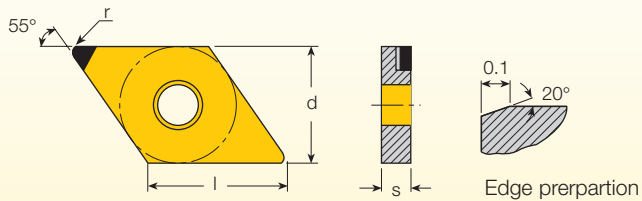
## 55° Rhombic Inserts



Tolerances (mm)

$d = \pm 0.08$

$s = \pm 0.13$



Designation	Dimensions											
	l	d	s	r	IB50	IB65	IB80	IB90	IB90A	ID4	ID5	ID6
<b>DNMA 150408T</b>	15.5	12.7	4.76	0.8	■							
<b>DNMA 150612T</b>	15.5	12.7	6.35	1.2	■							

■ Hardened Steel

▲ Cast Iron

● Aluminum Alloy (Si<12%)

# ISO TURN

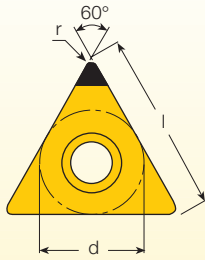
## 11° Clearance Positive Triangular Inserts



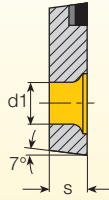
Tolerances (mm)

$d = \pm 0.08$

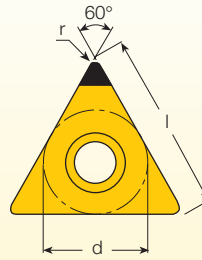
$s = \pm 0.13$



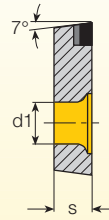
TCMT - CBN



Edge preparation



TCMT - PCD



Designation	Dimensions												
	l	d	s	r	d <sub>1</sub>	IB50	IB65	IB80	IB90	IB90A	ID4	ID5	ID6
TCMT 110204T	11	6.35	2.38	0.4	2.8	■							
TCMT 110204	11	6.35	2.38	0.4	2.8							●	

PCD-sharp cutting Edge.

■ Hardened Steel

▲ Cast Iron

● Aluminum Alloy (Si<12%)

# ISO TURN

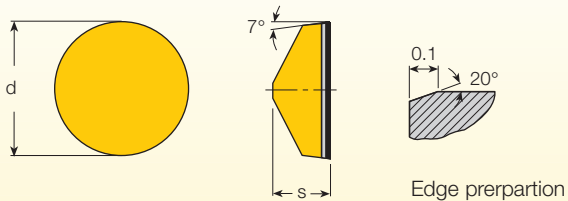
## Round Inserts



Tolerances (mm)

$d = \pm 0.025$

$s = \pm 0.13$



Designation	Dimensions									
	d	s	IB50	IB65	IB80	IB90	IB90A	ID4	ID5	ID6
<b>RCGX 060300T</b>	6.0	3.18			■	▲				
<b>RCGX 090300T</b>	9.0	3.18				▲				
<b>RCGX 120400T</b>	12.0	4.76				▲				

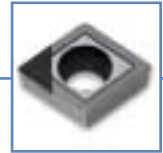
■ Hardened Steel

▲ Cast Iron

● Aluminum Alloy (Si<12%)

# ISO TURN

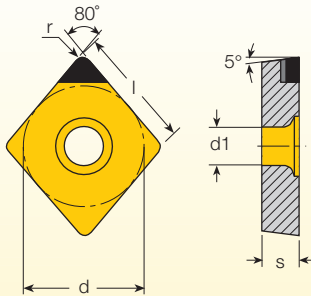
## 80° Rhombic Inserts



Tolerances (mm)

$d = \pm 0.05$

$s = \pm 0.13$



Designation	Dimensions					IB50	IB65	IB80	IB90	IB90A	ID4	ID5	ID6
	l	d	s	r	d <sub>1</sub>								
<b>CCMT 060204</b>	6.3	6.35	2.38	0.4	2.8							●	
<b>CCMT 09T304</b>	9.5	9.52	3.97	0.4	4.4							●	

PCD-sharp cutting Edge.

■ Hardened Steel

▲ Cast Iron

● Aluminum Alloy (Si<12%)

# ISO TURN

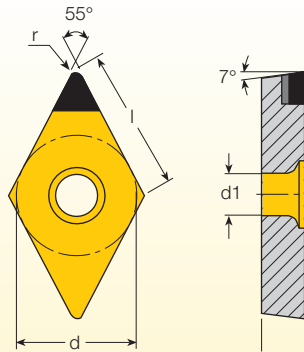
## 55° Rhombic Inserts



Tolerances (mm)

$d = \pm 0.05$

$s = \pm 0.13$



Designation	Dimensions						IB50	IB65	IB80	IB90	IB90A	ID4	ID5	ID6
	l	d	s	r	d <sub>1</sub>									
<b>DCMT 11T302</b>	11.6	9.52	3.97	0.2	4.4								●	
<b>DCMT 11T304</b>	11.6	9.52	3.97	0.4	4.4								●	
<b>DCMT 11T308</b>	11.6	9.52	3.97	0.8	4.4								●	

PCD-sharp cutting Edge.

- Hardened Steel
- ▲ Cast Iron
- Auminum Alloy (Si<12%)

# ISO TURN

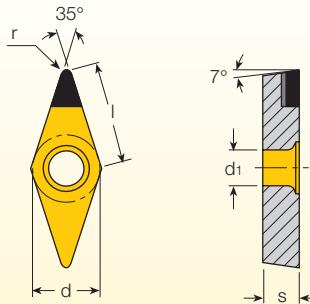
## 80° Rhombic Inserts



Tolerances (mm)

$d = \pm 0.025$

$s = \pm 0.13$



Designation	Dimensions					IB50	IB65	IB80	IB90	IB90A	ID4	ID5	ID6
	l	d	s	r	d <sub>1</sub>								
<b>VCGT 160404</b>	16.6	9.52	4.76	0.4	4.4							●	
<b>VCGT 160408</b>	16.6	9.52	4.76	0.8	4.4							●	

PCD-sharp cutting Edge.

■ Hardened Steel

▲ Cast Iron

● Aluminum Alloy (Si<12%)