

# TOTURN™

**NEW!**

## CBN GRADES

**EXCELLENT CUTTING PERFORMANCE  
IN HARDENED STEEL TB610  
AND CAST  
IRON TB670  
TB730**

### Insert Styles:

#### Negative:

CNGA  
CNMA  
DNMA  
RNMN  
SNMA  
TNMA  
VNGA  
WNGA  
WNMA

#### Positive:

CCGW  
DCGW  
RCGX  
SCGW  
TCGW  
TPGN  
TPGW  
VBGW

### Grades and Applications:

TB610 - For hardened steel  
TB670 - For hardened steel  
and chilled cast iron  
TB730 - For gray cast iron  
and carbide rolls

### Other:

- Most inserts offered with multiple tips to maximize economy.
- Tip lengths available in standard or mini sizes.



Ingersoll is pleased to announce the expansion of our CBN inserts for turning hardened steels and cast iron. These inserts have extremely high hardness and moderate fracture toughness. The chemical composition of these new grades and a state-of-the-art brazing process provide exceptional surface finish and stable tool life. These new grades represent an excellent complement to our existing, high performance CBN grades TB650 and KB90A.

Options within this new arsenal of CBN inserts include standard tip lengths, mini-tip lengths, single tips, multiple tips, full-top round inserts and wiper geometry. All together, there are more than 150 new inserts that allow great flexibility for any application.







## TB610

- Excellent oxidation resistance and chemical stability.
- For continuous to light interrupted turning.
- For machining hard steel, alloy steel, tool steel and case hardened steel.

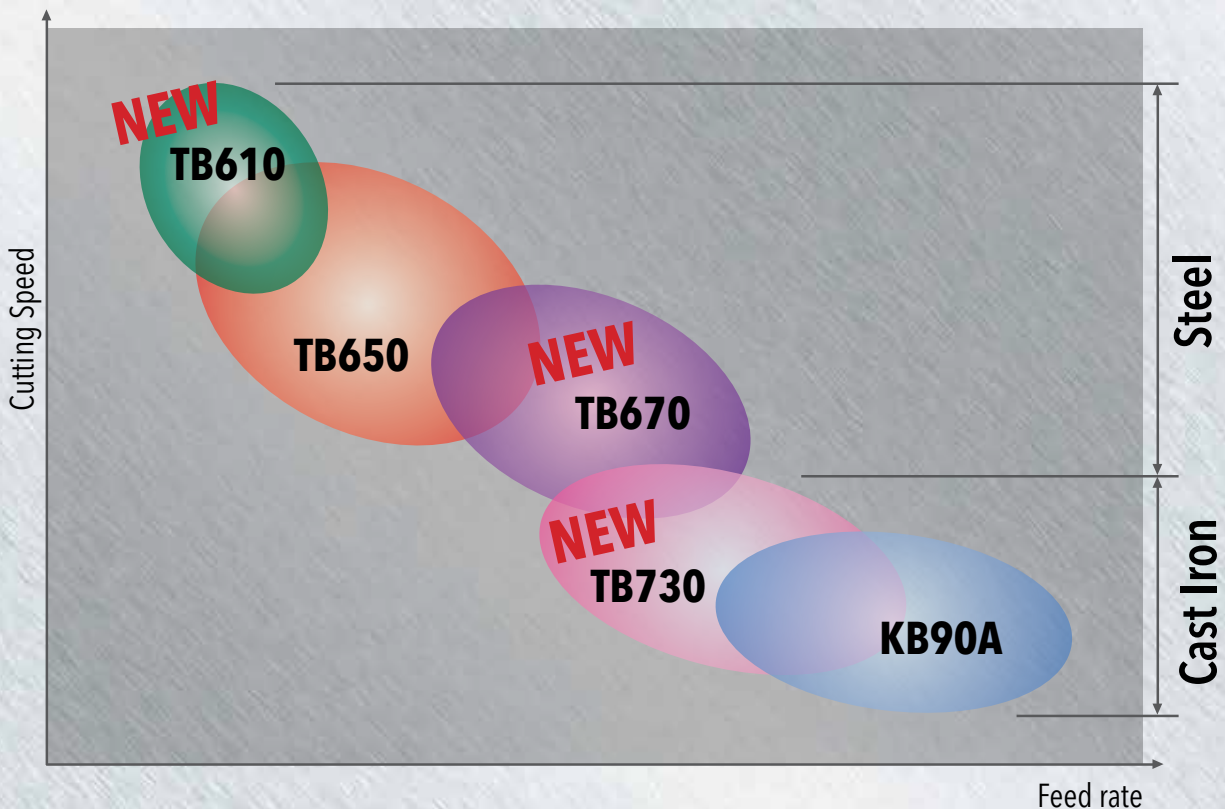
## TB670

- High hardness and impact resistance.
- For continuous to severe interrupted turning.
- For alloy steel, tool steel, case hardened steel and chilled cast iron.

## TB730

- High hardness and high fracture toughness.
- General turning and milling.
- For gray cast iron, nodular cast iron and carbide rolls.

### CBN GRADES & APPLICATION AREA





## RECOMMENDED CUTTING CONDITIONS

Materials		TB610	TB670	TB730
Gray Cast Iron (HB 180-230)	V (sfm)			1640 - 3280
	f (ipr)			.004 - .012
Chilled Cast Iron (> HB 400)	V (sfm)		260 - 490	260 - 490
	f (ipr)		.004 - .008	.004 - .012
Hardened Steel (HRc 40-65)	V (sfm)	490 - 1150	330 - 980	
	f (ipr)	.002 - .008	.004 - .012	
Sintered Metal (Hv 200-600)	V (sfm)		330 - 980	330 - 820
	f (ipr)		.002 - .008	.004 - .010
DCI or HSS Roll	V (sfm)		650 - 1640	
	f (ipr)		.002 - .008	
Super Alloy (Ni-base)	V (sfm)			330 - 980
	f (ipr)			.002 - .008





### CASE STORY 1

Component : Direct Annulus Gear (Carburized Steel, 60 HRc)  
External Turning - Continuous Cut, Wet

Maker	Competitor K	Ingersoll
Insert	CNGA 432	CNMA 432 LN
Grade	CBN	TB670
Tool Life (pcs.)	80 pcs.	160 pcs.
Cutting Speed (sfm)		394
Feed (ipr)		.006
Depth of Cut (inches)		.008

### CASE STORY 2

Component : Seal Ring (Chilled Cast Iron, 68-70 HRc)  
External Turning - Continuous Cut, Wet

Maker	Competitor E	Ingersoll
Insert	CNMA 432	CNMA 432 LN
Grade	CBN	TB670
Tool Life (pcs.)	7 pcs.	25 pcs.
Cutting Speed (sfm)		407
Feed (ipr)		.0035
Depth of Cut (inches)		.004-.020

### CASE STORY 3

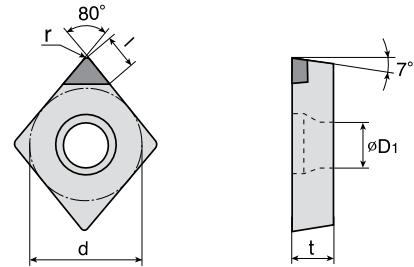
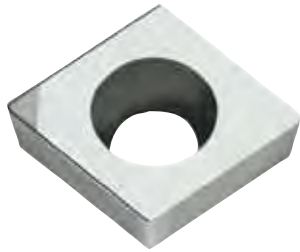
Component : Part of Car Seat (Hardened Steel, 60 HRc)  
External Facing, Severe Interruption Cut, Dry

Maker	Competitor E	Ingersoll
Insert	CNMA 431	CNMA 431 LN
Grade	Coated CBN	TB670
Tool Life (pcs.)	150 pcs.	350 pcs.
Cutting Speed (sfm)		690
Feed (ipr)		.001
Depth of Cut (inches)		.006



# TOTURN™

## ■ CCGW CBN

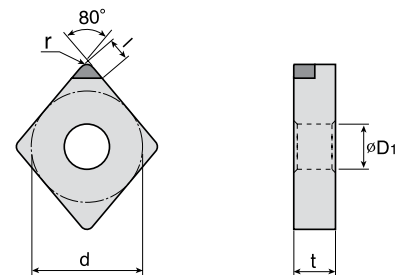
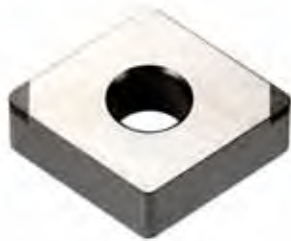


ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)					D1	Grade	TB610	TB670	TB730
		l	d	t	r						
CCGW 21.50.5LS2	CCGW 060202 LS2	.087	.250	.094	.008	.110			●	●	
CCGW 21.51LS2	CCGW 060204 LS2	.083	.250	.094	.016	.110		○	●	●	
CCGW 21.52LS2	CCGW 060208 LS2	.083	.250	.094	.031	.110		○	●	●	
CCGW 32.51LS2	CCGW 09T304 LS2	.094	.375	.157	.016	.173		○	●	●	
CCGW 32.51WZ-LS2	CCGW 09T304 WZ-LS2	.094	.375	.157	.016	.173		○	●	●	
CCGW 32.52LS2	CCGW 09T308 LS2	.091	.375	.157	.031	.173		○	●	●	
CCGW 32.52WZ-LS2	CCGW 09T308 WZ-LS2	.091	.375	.157	.031	.173			●	●	
CCGW 431LS2	CCGW 120404 LS2	.083	.500	.187	.016	.216				●	
CCGW 432LS2	CCGW 120408 LS2	.083	.500	.187	.031	.216				●	

LS2 - Insert with 2 tips WZ - Insert with wiper geometry

● = P ● = M ● = K ● = N ● = S ○ = H

## ■ CNGA CBN



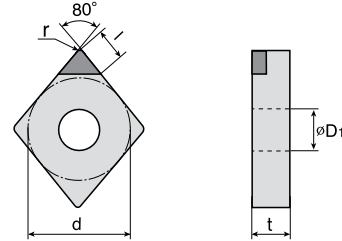
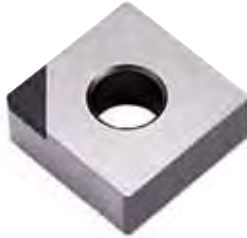
ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)					D1	Grade	TB610	TB670	TB730
		l	d	t	r						
CNGA 431WZ-LS2	CNGA 120404 WZ-LS2	.083	.500	.187	.016	.203		○	●		
CNGA 431WZ-LS4	CNGA 120404 WZ-LS4	.083	.500	.187	.016	.203			●		
CNGA 432WZ-LS2	CNGA 120408 WZ-LS2	.083	.500	.187	.031	.203		○	●	●	
CNGA 432WZ-LS4	CNGA 120408 WZ-LS4	.083	.500	.187	.031	.203		○	●		
CNGA 433WZ-LS2	CNGA 120412 WZ-LS2	.098	.500	.187	.047	.203			●	●	
CNGA 433WZ-LS4	CNGA 120412 WZ-LS4	.098	.500	.187	.047	.203			●		

LS2 - Insert with 2 tips LS4 - Insert with 4 tips WZ - Insert with wiper geometry

● = P ● = M ● = K ● = N ● = S ○ = H

# TOTURN™

## CNMA CBN

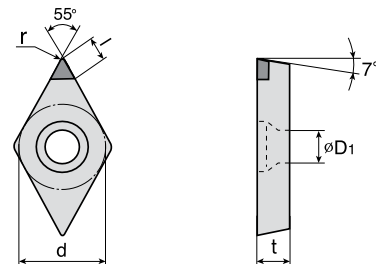
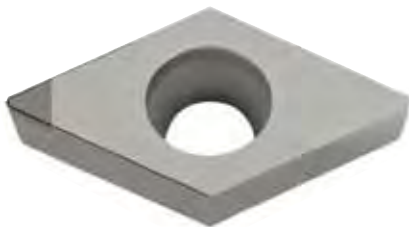


ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)						Grade	TB610	TB670	TB730
		l	d	t	r	D1					
CNMA 431LN	CNMA 120404 LN	.165	.500	.187	.016	.203		○	◐		
CNMA 431LN2	CNMA 120404 LN2	.165	.500	.187	.016	.203				●	
CNMA 431LS2	CNMA 120404 LS2	.087	.500	.187	.016	.203		○	◐	●	
CNMA431LS4	CNMA 120404 LS4	.087	.500	.187	.016	.203			◐	●	
CNMA 432LN	CNMA 120408 LN	.157	.500	.187	.031	.203		○	◐	●	
CNMA 432LS2	CNMA 120408 LS2	.083	.500	.187	.031	.203		○	◐	●	
CNMA 432LS4	CNMA 120408 LS4	.083	.500	.187	.031	.203		○	◐	●	
CNMA433LN	CNMA 120412 LN	.154	.500	.187	.047	.203		○	◐		
CNMA433LS2	CNMA 120412 LS2	.098	.500	.187	.047	.203			◐	●	
CNMA 433LS4	CNMA 120412 LS4	.098	.500	.187	.047	.203			◐	●	

LN - Insert with longer tip LS2 - Insert with 2 tips LS4 - Insert with 4 tips

● = P ● = M ● = K ● = N ● = S ○ = H

## DCGW CBN



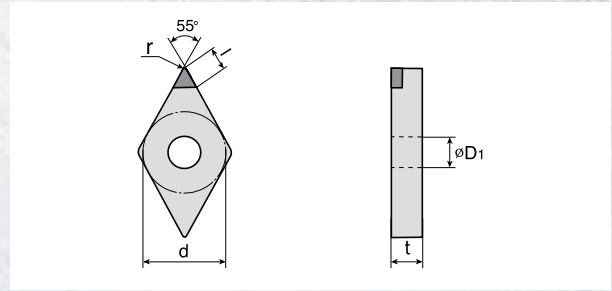
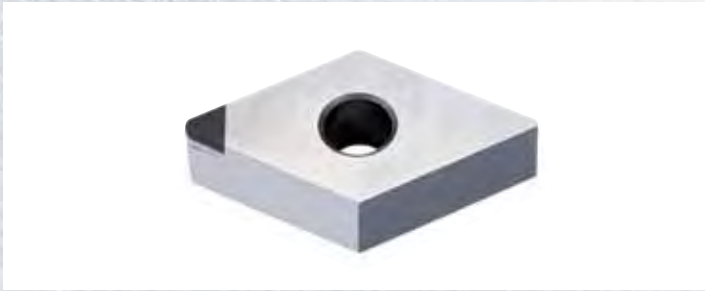
ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)						Grade	TB610	TB670	TB730
		l	d	t	r	D1					
DCGW21.50.5LS2	DCGW 070202 LS2	.102	.250	.094	.008	.110		○	◐	●	
DCGW21.51LS2	DCGW 070204LS2	.094	.250	.094	.016	.110		○	◐	●	
DCGW21.52LS2	DCGW 070208 LS2	.083	.250	.094	.031	.110		○	◐	●	
DCGW32.51LS2	DCGW 070304 LS2	.102	.375	.157	.016	.173				●	
DCGW32.52LS2	DCGW 11T308 LS2	.087	.375	.157	.031	.173		○	◐	●	

LS2 - Insert with 2 tips

● = P ● = M ● = K ● = N ● = S ○ = H



## ■ DNMA CBN



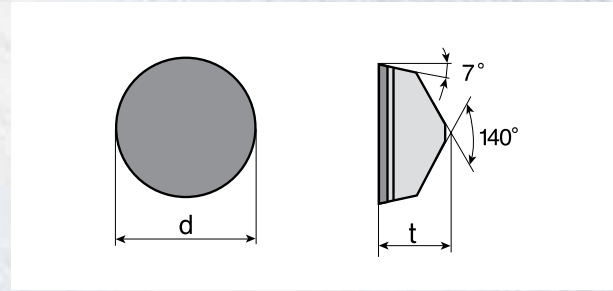
ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)						Grade	TB610	TB670	TB730
		l	d	t	r	D1					
DNMA 431LN	DNMA 150404 LN	.165	.500	.187	.016	.203	○	○	○	○	
DNMA 431LS2	DNMA 150404 LS2	.102	.500	.187	.016	.203	○	○	○	●	
DNMA 431LS4	DNMA 150404 LS4	.102	.500	.187	.016	.203	○	○	○	●	
DNMA 432LN	DNMA 150408 LN	.154	.500	.187	.031	.203	○	○	○	○	
DNMA 432LS2	DNMA 150408 LS2	.102	.500	.187	.031	.203	○	○	○	○	
DNMA 432LS4	DNMA 150408 LS4	.091	.500	.187	.031	.203			○	○	
DNMA 433LN	DNMA 150412 LN	.138	.500	.187	.047	.203	○	○	○	●	
DNMA 433LS2	DNMA 150412 LS2	.087	.500	.187	.047	.203			○	○	
DNMA 433LS4	DNMA 150412 LS4	.087	.500	.187	.047	.203			○	○	
DNMA 441LN	DNMA 150604 LN	.165	.500	.250	.016	.203					
DNMA 441LS2	DNMA 150604 LS2	.102	.500	.250	.016	.203					
DNMA 442LN	DNMA 150608 LN	.154	.500	.250	.031	.203					
DNMA 442LS2	DNMA 150608 LS2	.091	.500	.250	.031	.203					
DNMA 442LS4	DNMA 150608 LS4	.091	.500	.250	.031	.203					
DNMA 443LS2	DNMA 150612 LS2	.087	.500	.250	.047	.203					

LN - Insert with longer tip LS2 - Insert with 2 tips LS4 - Insert with 4 tips

● = P ● = M ● = K ● = N ● = S ○ = H

# TOTURN™

## RCGX CBN

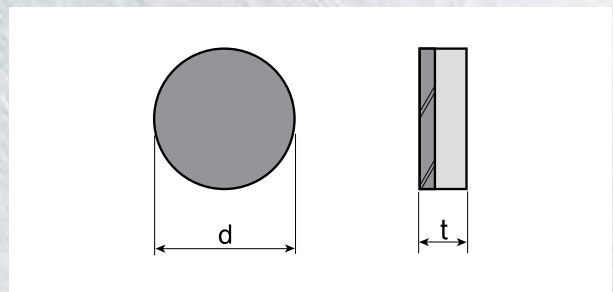


ANSI DESIGNATION	ISO DESIGNATION	Dimensions (inches)		Grade	TB610	TB670	TB730
		d	t				
RCGX 22FT	RCGX 060300 FT	.250	.125				●
RCGX 32FT	RCGX 090300 FT	.375	.125				●
RCGX 43FT	RCGX 120400 FT	.500	.187				●

FT - Full top CBN

● = P ● = M ● = K ● = N ● = S ○ = H

## RNMN CBN



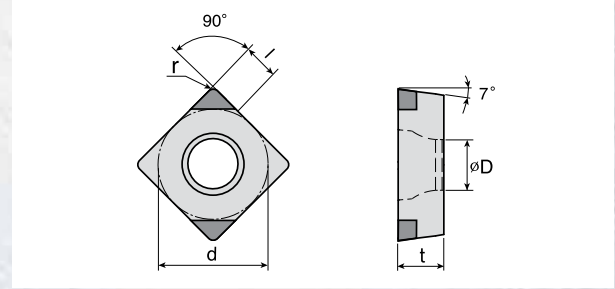
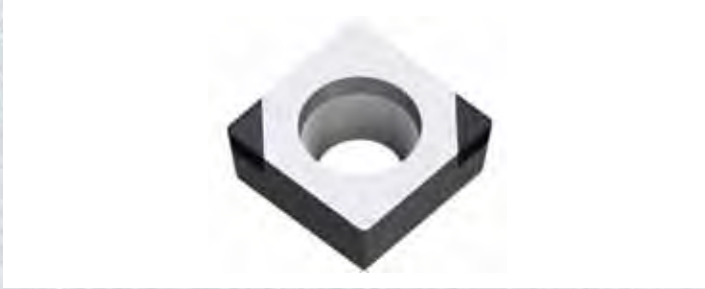
ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)		Grade	TB610	TB670	TB730
		d	t				
RNM32FT	RNMN 090300 FT	.375	.125				●
RNM42FT	RNMN 120400 FT	.500	.125				●

FT - Full top CBN

● = P ● = M ● = K ● = N ● = S ○ = H



## SCGW CBN

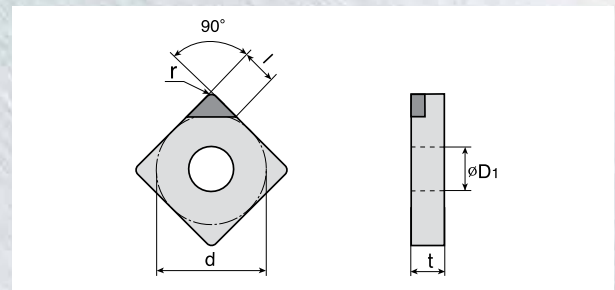
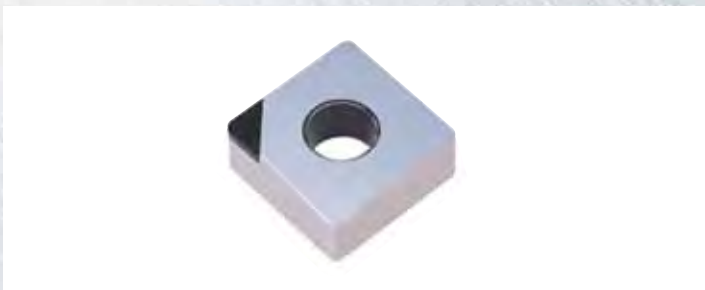


ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)						Grade	TB610	TB670	TB730
		l	d	t	r	D1					
SCGW 32.51LS2	SCGW 09T304 LS2	.106	.375	.157	.016	.173				●	
SCGW 32.52LS2	SCGW 09T308 LS2	.106	.375	.157	.031	.173				●	

LS2 - Insert with 2 tips

● = P ● = M ● = K ● = N ● = S ○ = H

## SNMA CBN



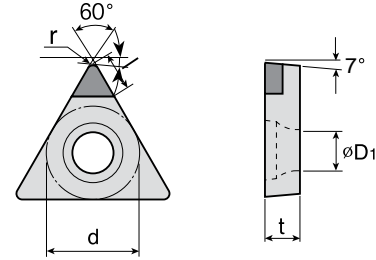
ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)						Grade	TB610	TB670	TB730
		l	d	t	r	D1					
SNMA 431LN	SNMA 120404 LN	.165	.500	.187	.016	.203				◐	
SNMA 431LS2	SNMA 120404 LS2	.098	.500	.187	.016	.203				◐ ●	
SNMA 431LS4	SNMA 120404 LS4	.098	.500	.187	.016	.203				◐	
SNMA 432LN	SNMA 120408 LN	.165	.500	.187	.031	.203		○		◐ ●	
SNMA 432LS2	SNMA 120408 LS2	.098	.500	.187	.031	.203		○		◐ ●	
SNMA 432LS4	SNMA 120408 LS4	.098	.500	.187	.031	.203				◐	
SNMA 432LS8	SNMA 120408 LS8	.098	.500	.187	.031	.203				◐	

LN - Insert with longer tip LS2 - Insert with 2 tips LS4 - Insert with 4 tips LS8 - Insert with 8 tips

● = P ● = M ● = K ● = N ● = S ○ = H

# TOTURN™

## TCGW CBN

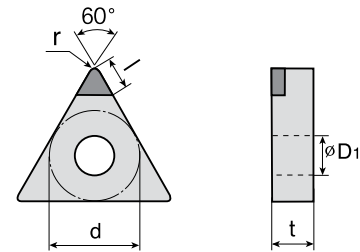


ANSI DESIGNATION	ISO DESIGNATION	Dimensions (inches)					D1	Grade	TB610	TB670	TB730
		l	d	t	r						
TCGW 731LS3	TCGW 090204 LS3	.090	.219	.094	.016	.098	○			●	
TCGW 732LS3	TCGW 090208 LS2	.082	.219	.094	.031	.098			◐		
TCGW 21.51LS3	TCGW 110204 LS3	.090	.250	.094	.016	.110	○		◐	●	
TCGW 21.52LS3	TCGW 110208 LS3	.090	.250	.094	.031	.110			◐	●	
TCGW 32.51LS3	TCGW 16T304 LS3	.082	.375	.157	.016	.173	○		◐	●	
TCGW 32.52LS3	TCGW 16T308 LS3	.082	.375	.157	.031	.173	○		◐	●	

LS3 - Insert with 3 tips

● = P   ● = M   ● = K   ● = N   ● = S   ○ = H

## TNMA CBN



ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)					D1	Grade	TB610	TB670	TB730
		l	d	t	r						
TNMA 331LN	TNMA 160404 LN	.169	.375	.187	.016	.150			◐		
TNMA 331LS3	TNMA 160404 LS3	.086	.375	.187	.016	.150	○		◐	●	
TNMA 331LS6	TNMA 160404 LS6	.086	.375	.187	.016	.150			◐		
TNMA 332LN	TNMA 160408 LN	.157	.375	.187	.031	.150			◐		
TNMA 332LS3	TNMA 160408 LS3	.082	.375	.187	.031	.150	○		◐	●	
TNMA 332LS6	TNMA 160408 LS6	.082	.375	.187	.031	.150			◐		
TNMA 333LS3	TNMA 160412 LS3	.100	.375	.187	.047	.150			◐	●	

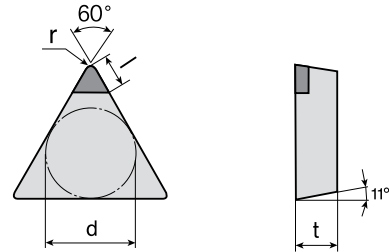
LN - Insert with longer tip   LS3 - Insert with 3 tips   LS6 - Insert with 6 tips

● = P   ● = M   ● = K   ● = N   ● = S   ○ = H



# TOTURN™

## TPG CBN

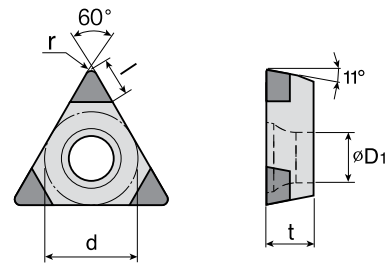


ANSI DESIGNATION	ISO DESIGNATION	l	Dimensions (inches)			r	Grade	TB610	TB670	TB730
			d	t						
TPG 731LS3	TPGN 090204 LS3	.090	0.219	0.094	0.016		○			
TPG 21.50.5LS3	TPGN 110302 LS3	.110	0.250	0.125	0.008					●
TPG 21.51LS3	TPGN 110304 LS3	.102	0.250	0.125	0.016		○	◐		●
TPG 21.52LS3	TPGN 110308 LS3	.090	0.250	0.125	0.031		○	◐		●
TPG 32.51LS3	TPGN 160304 LS3	.110	0.375	0.125	0.016		○	◐		●
TPG 32.52LS3	TPGN 160308 LS3	.100	0.375	0.125	0.031		○	◐		●

LS3 - Insert with 3 tips

● = P   ● = M   ● = K   ● = N   ● = S   ○ = H

## TPGW CBN

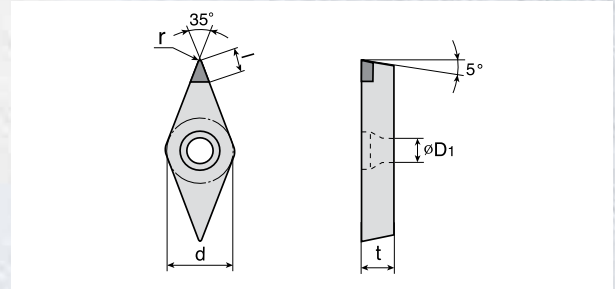
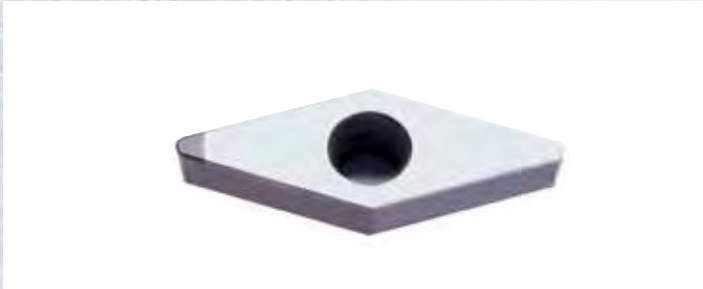


ANSI DESIGNATION	ISO DESIGNATION	l	Dimensions (inches)				D1	Grade	TB610	TB670	TB730
			d	t	r						
TPGW 631LS3	TPGW 080204 LS3	.082	.187	.094	.016	.098			◐		
TPGW 731LS3	TPGW 090204 LS3	.090	.219	.094	.016	.098			◐		●
TPGW 732LS3	TPGW 090208 LS3	.078	.219	.094	.031	.098			◐		
TPGW 220.5LS3	TPGW 110302 LS3	.110	.250	.125	.008	.134	○				●
TPGW 221LS	TPGW 110304 LS	.102	.250	.125	.016	.134			◐		
TPGW 221LS3	TPGW 110304 LS3	.102	.250	.125	.016	.134	○				●
TPGW 222LS3	TPGW 110308 LS3	.090	.250	.125	.031	.134	○		◐		●
TPGW 331LS3	TPGW 160404 LS3	.110	.375	.187	.016	.173			◐		
TPGW 332LS3	TPGW 160408 LS3	.100	.375	.187	.031	.173			◐		

LS3 - Insert with 3 tips

● = P   ● = M   ● = K   ● = N   ● = S   ○ = H

## VBGW CBN

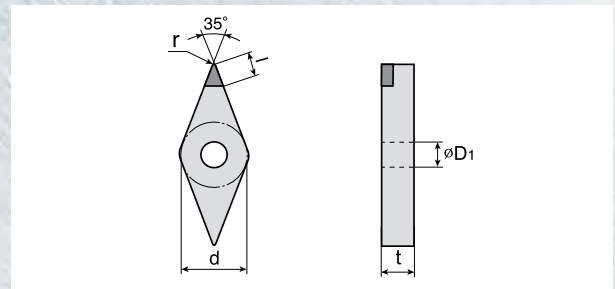
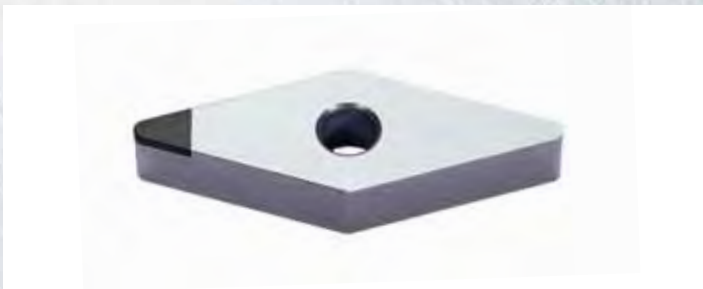


ANSI DESIGNATION	ISO DESIGNATION	Dimensions (inches)						Grade	TB610	TB670	TB730
		l	d	t	r	D1					
VBGW 222LS2	VBGW 110308 LS2	.094	.250	.125	.031	.110	○	○	○	●	
VBGW 332LS2	VBGW 160408 LS2	.090	.375	.187	.031	.173	○	○	○	●	

LS2 - Insert with 2 tips

● = P   ● = M   ● = K   ● = N   ● = S   ○ = H

## VNGA CBN



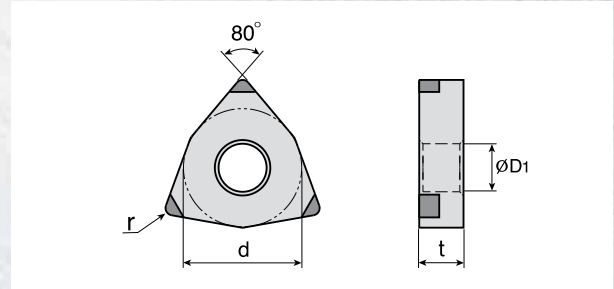
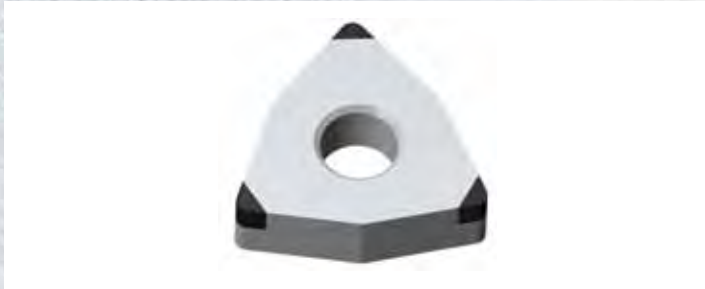
ANSI DESIGNATION	ISO DESIGNATION	Dimensions (inches)						Grade	TB610	TB670	TB730
		l	d	t	r	D1					
VNGA 331LN	VNGA 160404 LN	.197	.375	.187	.016	.150	○	○	○	●	
VNGA 331LS2	VNGA 160404 LS2	.126	.375	.187	.016	.150	○	○	○	●	
VNGA 332LN	VNGA 160408 LN	.161	.375	.187	.031	.150	○	○	○	●	
VNGA 332LS2	VNGA 160408 LS2	.094	.375	.187	.031	.150	○	○	○	●	
VNGA 332LS4	VNGA 160408 LS4	.094	.375	.187	.031	.150	○	○	○	●	

LN - Insert with longer tip   LS2 - Insert with 2 tips   LS4 - Insert with 4 tips

● = P   ● = M   ● = K   ● = N   ● = S   ○ = H



## WNGA CBN

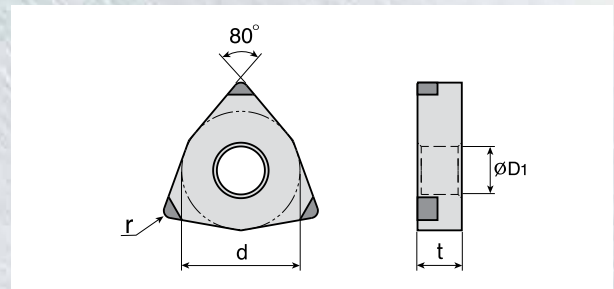


ANSI DESIGNATION	ISO DESIGNATION	Dimensions (inches)						Grade	TB610	TB670	TB730
		l	d	t	r	D1					
WNGA 332WZ-LS6	WNGA 060408 WZ-LS6	.083	.375	.187	.031	.150					
WNGA 432WZ-LS3	WNGA 080408 WZ-LS3	.083	.500	.187	.031	.203					
WNGA 432WZ-LS6	WNGA 080408 WZ-LS6	.083	.500	.187	.031	.203					
WNGA 433WZ-LS3	WNGA 080412 WZ-LS3	.083	.500	.187	.047	.203					

LS3 - Insert with 3 tips LS6 - Insert with 6 tips WZ - Insert with wiper geometry

● = P ● = M ● = K ● = N ● = S ○ = H

## WNMA CBN



ANSI DESIGNATION	ISO DESIGNATION	Dimensions (inches)						Grade	TB610	TB670	TB730
		l	d	t	r	D1					
WNMA 432LS3	WNMA 080408 LS3	.083	.500	.187	.031	.203					
WNMA 432LS6	WNMA 080408 LS6	.083	.500	.187	.031	.203					

LS3 - Insert with 3 tips LS6 - Insert with 6 tips

● = P ● = M ● = K ● = N ● = S ○ = H

### Availability

In stock

### Price

Available in the GAL system