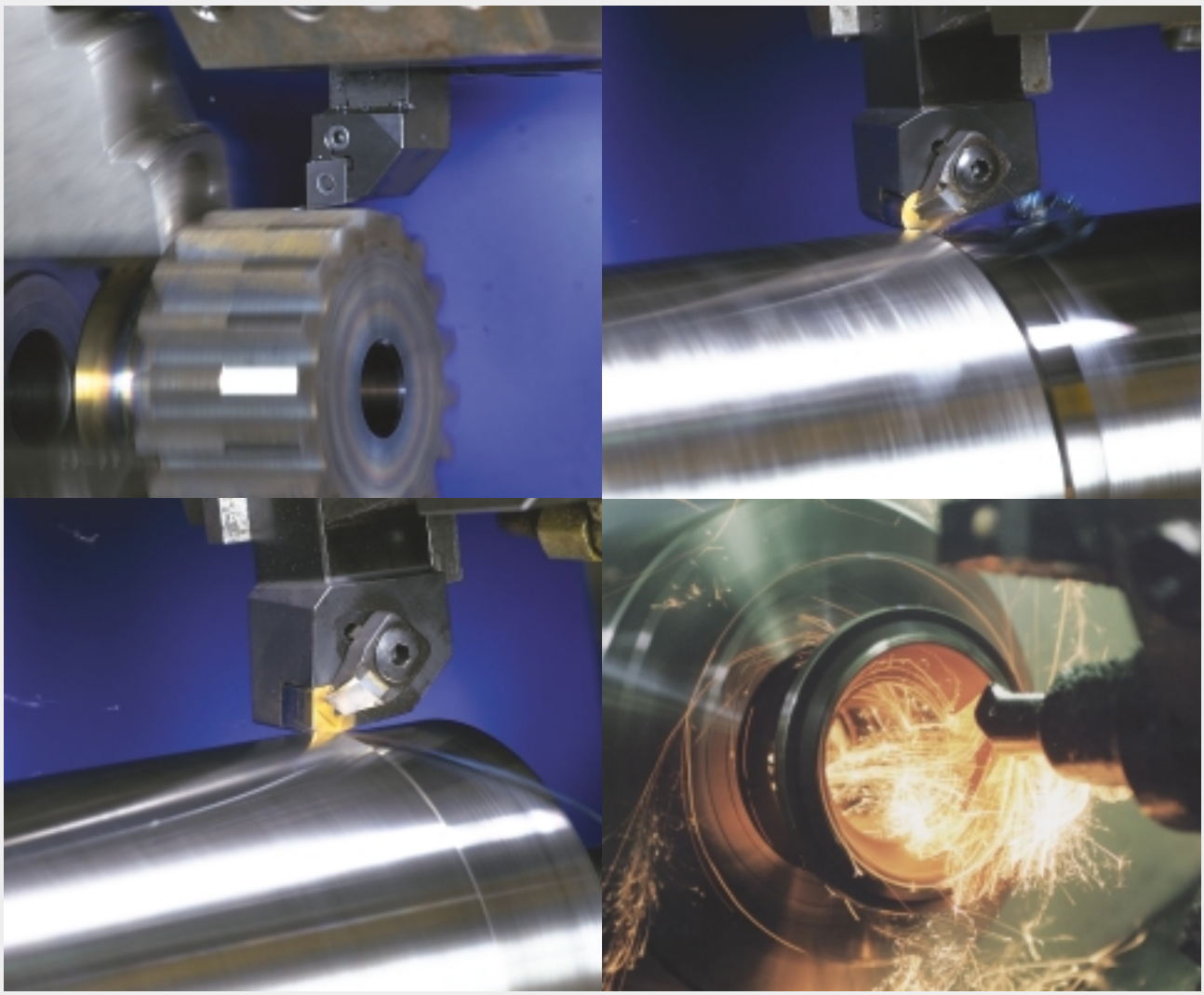
CERATIP®

Advanced Materials for HARD TURNING

CERAADVANCE



KYOCERA

ISO 14001 ISO 9001 JQA-0410

JAPAN QUALITY ASSURANCE ORGANIZATION

CONTENTS

■ CERATIP Advanced Materials for Hard Turning

HRC40~60	V= 150~250m/min		**A65**	• Long tool life • Excellent finishing • High economy
HRC55~67	V= 250~350m/min		**A66N**	• Long tool life • Replacement from CBN
HRC55~67	V= 80~150m/min	General	**KBN10B**	• Long tool life • Excellent finishing
		Light interruption · Roughing	**KBN25B**	• Anti chipping performance • Long tool life • High efficient machining
		Heavy interrruption · Heavy duty	**KBN900**	• High stability • Long tool life • High efficient machining

A65 Black Hot Press Ceramic for general machining

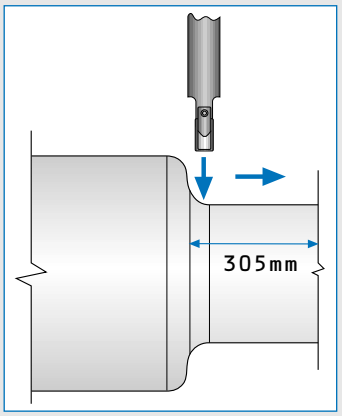
Features

- Al_2O_3 + TiC based Ceramics
- Turning of hard steel (45~60HRC)
- Finishing and semi finishing of high temperature nickel alloys
- Dry cutting
- Vc from 40 upto 250 m/min

Large size inserts are available for roll turning!

Field data

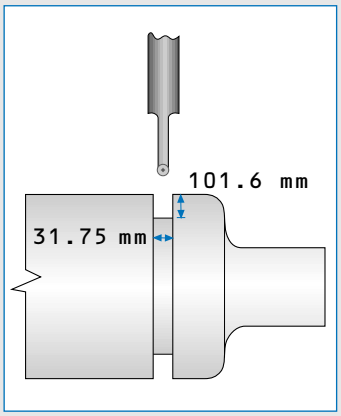
Roll Turning with Ceramics



Part: Mill Roll
Material: Hi Chrome
Hardness: 75 Shore (HRC56)

Operation: Turning
Insert: LNUN381232
Grade: A65
Speed: 57~ 70 m/min
Feed: 0,15 mm/rev
Depth of Cut: 63,5 mm (Total)
Pieces per Edge:
CERATIP = 1
COMPETITOR = 1/2

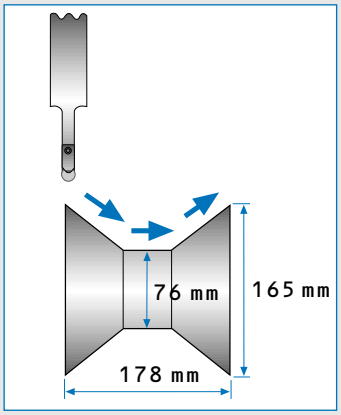
Roll Turning with Ceramics



Part: Mill Roll
Material: Hi Chrome
Hardness: 75 Shore (HRC56)

Operation: Grooving
Insert: RCMA311800 (Special)
Grade: A65
Speed: 59 ~ 80 m/min
Feed: 0,15 mm/rev
Width: 1,5 mm
Pieces per Edge:
CERATIP = 1
COMPETITOR = 1/4

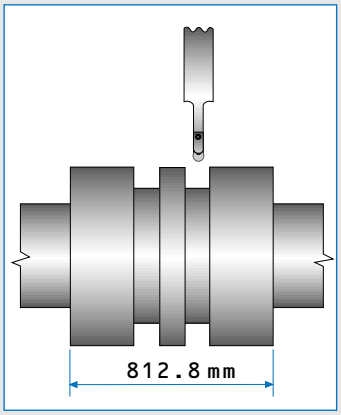
Roll Turning with Ceramics



Part: Entry Guide Roller
Material: D2 (Tool Steel)
Hardness: 58 - 60 HRC

Operation: Turning
Insert: RCGX090700
Grade: A65
Speed: 210 m/min
Feed: 0,16 mm/rev
Depth of Cut: 1,27 mm
Pieces per Edge:
CERATIP = 2-3 pcs

Roll Turning with Ceramics

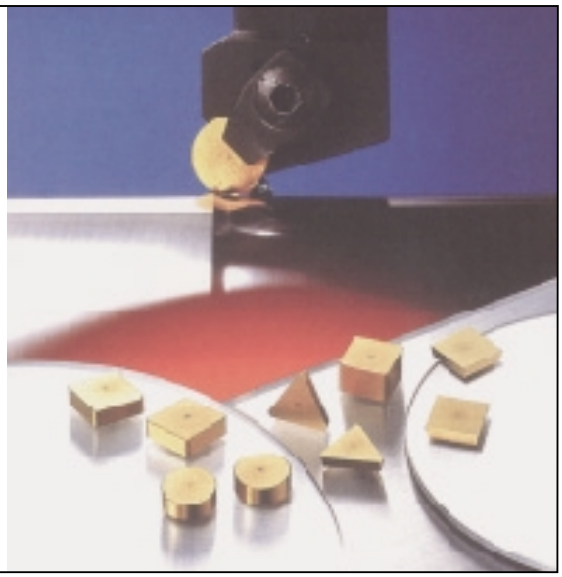


Part: Mill Roll
Material: Cast Iron
Hardness: 64 Shore (HRC47)

Operation: Turning & Facing
Insert: RCMA310900 (Special)
Grade: A65
Speed: 120 m/min
Feed: 0,38 mm/rev
Depth of Cut: 3,17 mm

Cut entire body, grooves and face of grooves.

A66N Coated mixed Ceramic



Features

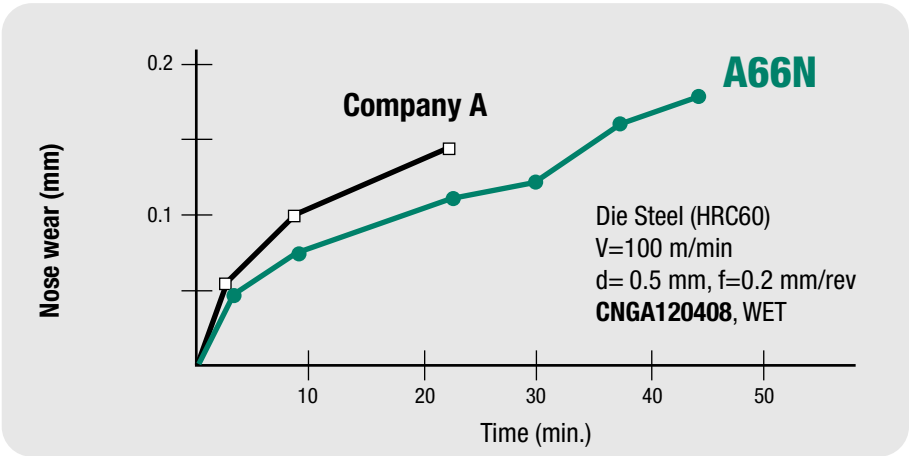
- Al_2O_3 + TiC cermics plus PVD coating
- Turning of hardened steel (55~67HRC)
- High heat and wear resistance
- PVD - Easy recognition of used edges
- Dry cutting
- Vc 200 upto 350 m/min

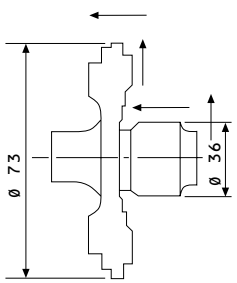
Replacement from CBN to reduce tool cost!

A66N can be used to replace CBN inserts in many hard turning applications

Field data

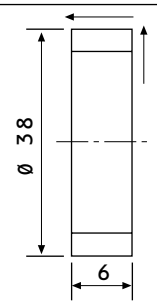
Wear Resistance

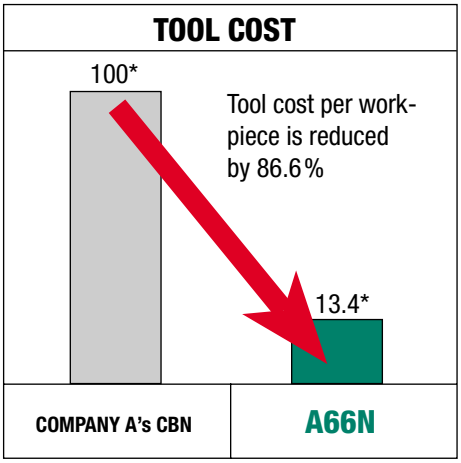


HUB COMPRESSOR TURBIN	
SCM 415 HRC58~65 V=110 m/min d=0.2~0.3 mm f =0.08~0.12 mm/rev DRY DNGA150408	
COMPETITOR'S CERAMIC	100 PCS / EDGE
A66N	160 PCS / EDGE

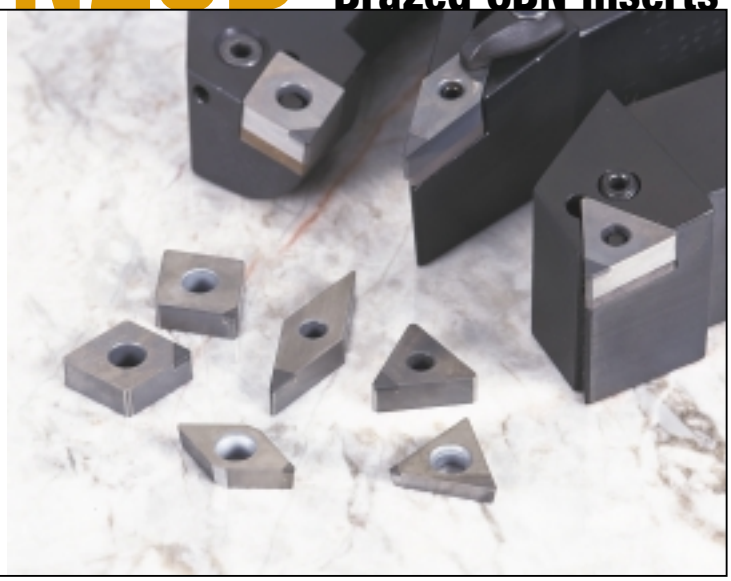
Replacement from CBN

Tool cost comparison

VALVE SHEET SINTERED MATERIAL	
Hv 290~410 V=70 m/min d=0.5 mm f =0.2 mm/rev WET TPGN160308	
COMPANY A's CBN	400 PCS / EDGE
A66N	200 PCS / EDGE



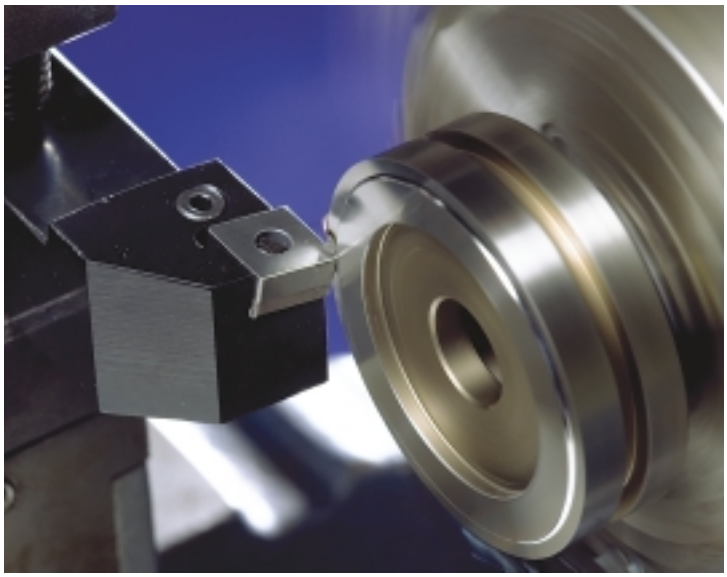
KBN10B/KBN25B Brazed CBN inserts



Features

- High quality CBN brazed insert
- Economical small edge and multi corner use type is available
- Machining of heat treated steel up to HRC65
- Vc from 50 upto 200 m/min
- Tougher grade KBN25B is now available in various geometry

Grade selection



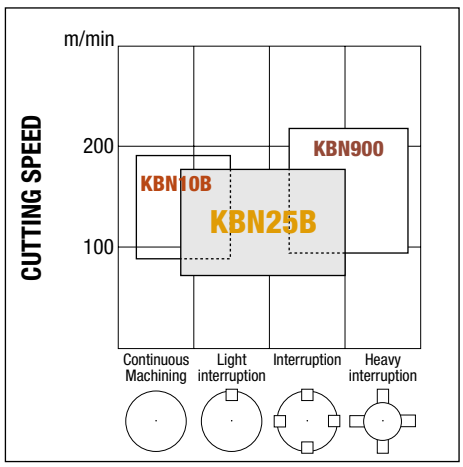
KBN10B

General purpose, for finishing
Has a high degree of stability, preventing premature chipping, while exhibiting very high wear resistance and edge integrity

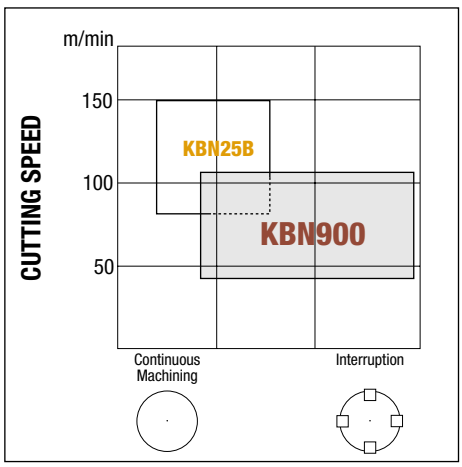
KBN25B

General purpose, for interruption
High stability at high speed and high feed rate machining

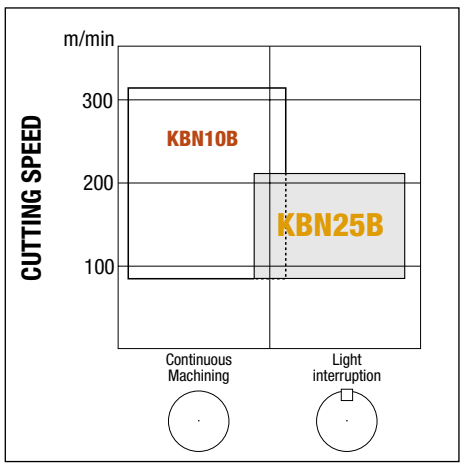
● Hardened Materials



● Roll

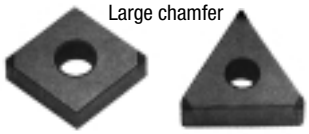


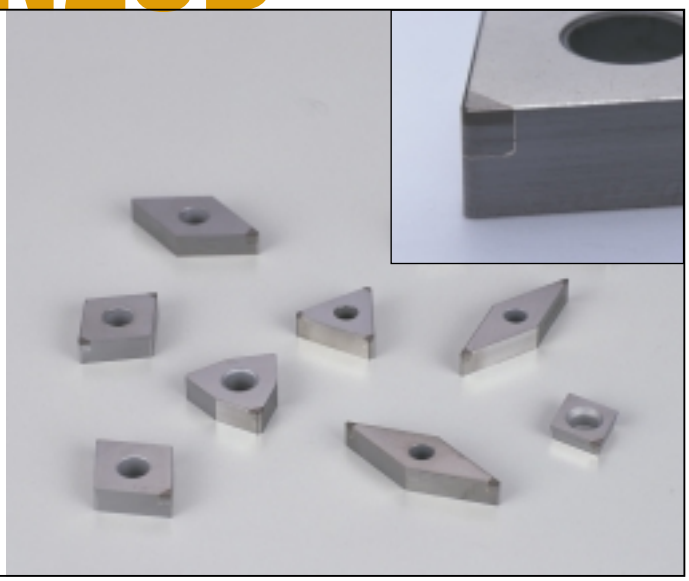
● Sintered Metal



KBN10B/KBN25B

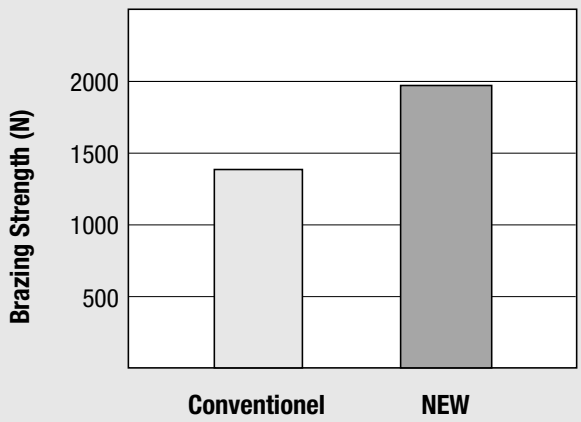
■ Economical Small & Multi edge

Without indication Large size CBN		**SE** Small size CBN	
S2E, S3E Small size CBN 2 or 3 corners brazed		**ME-T** Small size CBN 2 or 3 corners brazed Large chamfer	

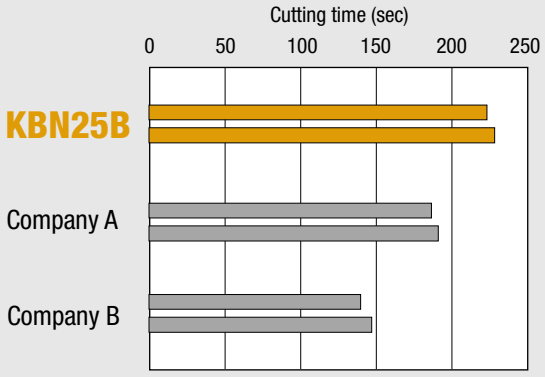


■ Improved Brazing Quality

● Brazing Strength



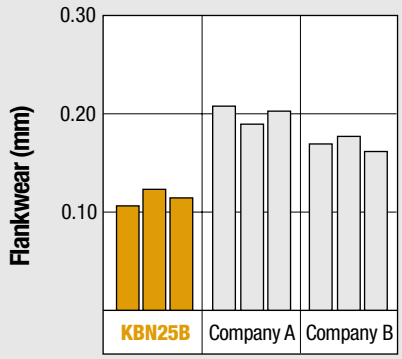
● Brazing Durability



V=150m/min, d=1.0mm, f=0.02mm/rev, DRY, Die steel (59~62HRC) Machining diameter Ø 100~Ø 70

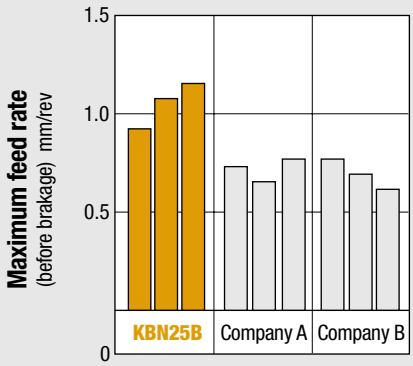
■ Field Data

● KBN25B Wear resistance



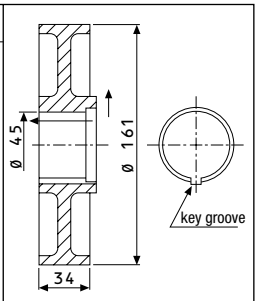
Workpiece material: Die steel (60HRC), SNGA 120408
wet, V=120m/min, f=0.2mm/rev, d=0.2mm

● KBN25B Toughness



Workpiece material: Die steel (60HRC), SNGA 120408
wet, V=220m/min, d=0.5mm

● KBN25B Tool life comparison

SCr42H	
• CAM • 58HRC • V=100m/min • d=0.30mm facing • d=0.15mm boring • f=0.10 mm/rev facing • f=0.07 mm/rev facing • dry	
KBN25B	**66 pcs / edge**
Company A CBN	**40 pcs / edge**

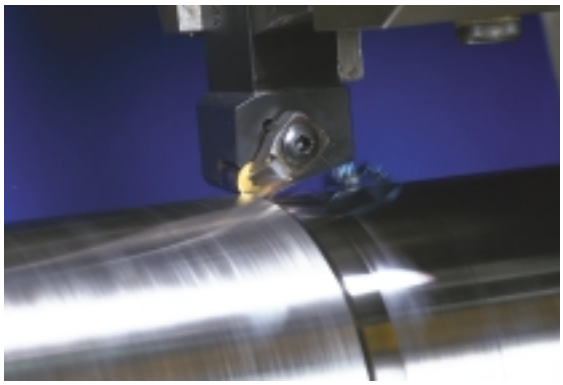
KBN900 PVD coated solid CBN

Features

- For heavy duty interrupted machining
- All corner is available = Excellent cost performance
- PVD - Easy recognition of used edges
- Best solution for roll turning

Application Example

Operation	Material	Machining Parameters	Insert Type	Summary
Turning outside diameter of mill roll	18% chromium iron 58 HRC	Cutting speed = 46 m/min Feed rate = 0.8 mm/rev Depth of cut = 1.5 mm Dry cutting	RNMN120300S KBN900	Stock removal rate of 40 cm^3/min; 60% time saving over grinding
Reclaiming worn pinch roll	Hardened steel 60 - 66 HRC	Cutting speed = 50 m/min Feed rate = 1.0 mm/rev Depth of cut = 1.0 mm Dry cutting	RNMN120300S KBN900	Surface finish R_a = 3.1 µm; 20 hours with grinding, 2 hours machining time with KBN900
Removing threads from rolling die	M2 high speed steel 62 - 64 HRC	Cutting speed = 95 m/min Feed rate = 0.1 mm/rev Depth of cut = 2.5 - 4.0 mm Dry cutting	RNMN120300S KBN900	Tool life 640 rolls/insert; cycle times reduced by 90% compared to grinding
Turning, facing and boring wear ring, heavy interrupted cut	Ni-Hard BS 4844 55 - 62 HRC	Cutting speed = 70 m/min Feed rate = 0.25 - 0.4 mm/rev Depth of cut = 1- 3 mm Dry cutting	RNMN120300S KBN900	8 hours machining time reduction with KBN900 compared to ceramic tools



Technical Information

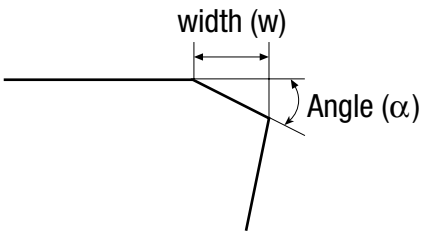
■ Recommended cutting conditions

GRADE	HARDNESS (HRC)	CUTTING SPEED Vc (m/min)	FEED RATE f (m/rev)	DEPTH OF CUT ap (mm)
A65 (Uncoated Ceramic)	40 ~ 60	200 ~ 300	0.05 ~ 0.35	0.30 ~ 0.60
A66N (PVD coated Ceramic)	55 ~ 67	250 ~ 400	0.05 ~ 0.35	0.30 ~ 0.60
GRADE	**HARDNESS** (HRC)	**CUTTING SPEED Vc** (m/min)	**FEED RATE f** (m/rev)	**DEPTH OF CUT ap** (mm)
KBN10B (CBN brazed)	55 ~ 67	120 ~ 200	0.05 ~ 0.20	0.15 ~ 0.35
KBN25B (CBN brazed)	55 ~ 67	100 ~ 180	0.05 ~ 0.25	0.15 ~ 0.35
KBN900 (PVD coated solid CBN)	55 ~ 67	100 ~ 200	0.08 ~ 0.35	0.15 ~ 7.00

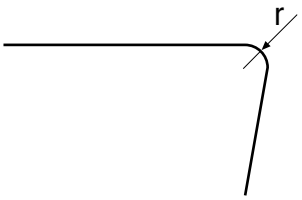
■ Edge Preparation

The edge preparation for indexable inserts consists either of a chamfer or a hone or a combination of both. The chamfer is characterized by the width and the angle as shown below, while the hone is defined by the radius 'r'. Edge preparation selection is especially critical for ceramics inserts and should be matched to the application for which the insert is to be applied. In general larger chamfers with or without hone are recommended for rough turning while smaller chamfers and/or hones are recommended for finish turning.

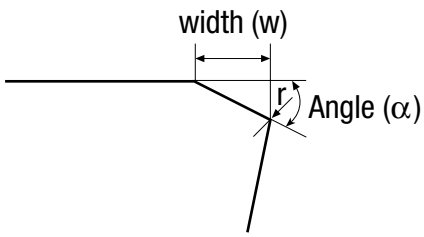
CHAMFER



HONE



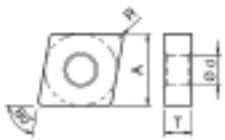
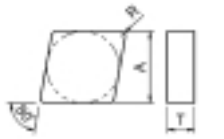
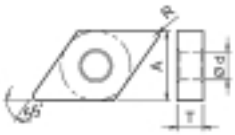
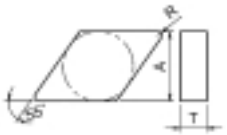
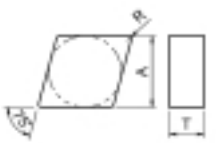
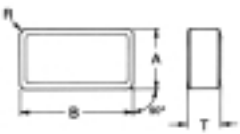
CHAMFER & HONE



Ceramic

■ Negative

Edge Preparation of Negative insert	
A65 (without indication)	0.20 mm x 25°
A66N (without indication)	0.15 mm x 25° + hone
-T05 and TNGN11-type	0.05 mm x 20°
-T01525	0.15 mm x 25°
-T03030R/-T30	0.30 mm x 30° + hone
LNUN381232 A65	2.00 mm x 15° + 0.15 mm x 25° + hone

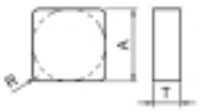
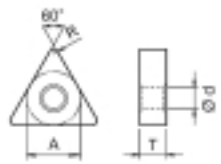
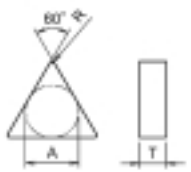
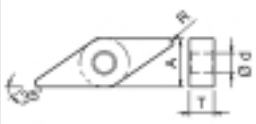
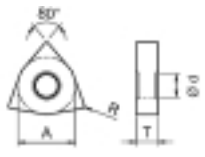
SHAPE		DESCRIPTION	DIMENSION (mm)				AVAILABILITY				
			A	T	Ø d	R	A65	A66N			
		CNGA120404	12,70	4,76	5,16	0,4	●	●			
		CNGA120404 T01525	12,70	4,76	5,16	0,4		●			
		CNGA120408	12,70	4,76	5,16	0,8	●	●			
		CNGA120408 T01525	12,70	4,76	5,16	0,8		●			
		CNGA120408 T03030R	12,70	4,76	5,16	0,8		●			
		CNGA120412	12,70	4,76	5,16	1,2	●	●			
		CNGA120412-T30	12,70	4,76	5,16	1,2					
		CNGN120404	12,70	4,76	-	0,4	●				
		CNGN120708	12,70	7,94	-	0,8		●			
		CNGN120712	12,70	7,94	-	1,2		●			
		CNGN120712 T01525	12,70	7,94	-	1,2		●			
		CNGN120716	12,70	7,94	-	1,6		●			
		CNGN120716 T01525	12,70	7,94	-	1,6		●			
		CNGN160716	15,875	7,94	-	1,6	●				
		DNGA150408	12,70	4,76	5,16	0,8		●			
		DNGA150412 T01525	12,70	4,76	5,16	1,2		●			
		DNGA150604	12,70	6,35	5,16	0,4	●	●			
		DNGA150604 T01525	12,70	6,35	5,16	0,4		●			
		DNGA150608	12,70	6,35	5,16	0,8	●	●			
		DNGA150608 T01525	12,70	6,35	5,16	0,8		●			
		DNGA150612	12,70	6,35	5,16	1,2	●	●			
		DNGN150704	12,70	7,94	-	0,4		●			
		DNGN150708	12,70	7,94	-	0,8	●	●			
		DNGN150712	12,70	7,94	-	1,2		●			
		DNGN150716	12,70	7,94	-	1,6		●			
		ENGN130704	12,70	7,94	-	0,4	●				
		ENGN130708	12,70	7,94	-	0,8	●	●			
		ENGN130712	12,70	7,94	-	1,2	●	●			
		ENGN130716	12,70	7,94	-	1,6	●				
		LNUN381232	19,05	12,70	B=38.10	3,2	●				
		RNGN060300 T01525	6,35	3,18	-	-		●			
		RNGN090300 T01525	9,525	3,18	-	-		●			
		RNGN090400	9,525	4,76	-	-		●			
		RNGN120400	12,70	4,76	-	-	●				
		RNGN120700	12,70	7,94	-	-	●	●			
		RNGN120700 T30	12,70	7,94	-	-		●			

● Stock Standard ○ Non Stock Standard

Ceramic

■ Negative

Edge Preparation of Negative insert	
A65 (without indication)	0.20 mm x 25°
A66N (without indication)	0.15 mm x 25° + hone
-T05 and TNGN11-type	0.05 mm x 20°
-T01525	0.15 mm x 25°
-T03030R/-T30	0.30 mm x 30° + hone
LNUN381232 A65	0.80 mm x 15°

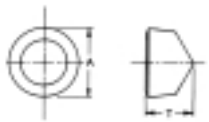
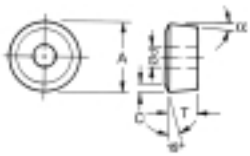
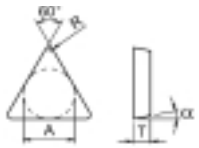
SHAPE		DESCRIPTION	DIMENSION (mm)				AVAILABILITY				
			A	T	Ø d	R	A65	A66N			
		SNGA120404	12,70	4,76	5,16	0,4		●			
		SNGA120408	12,70	4,76	5,16	0,8		●			
		SNGA120412	12,70	4,76	5,16	1,2		●			
		SNGA120412 T01525	12,70	4,76	5,16	1,2		●			
		SNGN120412	12,70	4,76	-	1,2	●				
		SNGN120416-T05	12,70	4,76	-	1,6	●				
		SNGN120432	12,70	4,76	-	3,2	●				
		SNGN120704	12,70	7,94	-	0,4		●			
		SNGN120708	12,70	7,94	-	0,8		●			
		SNGN120712	12,70	7,94	-	1,2		●			
		SNGN120716	12,70	7,94	-	1,6		●			
		SNGN120720	12,70	7,94	-	2,0		●			
		SNGN120730	12,70	7,94	-	3,0		●			
		SNMN120708	12,70	7,94	-	0,8	●				
		SNMN120716	12,70	7,94	-	1,6	●				
		SNMN120720	12,70	7,94	-	2,0	●				
		TNGA160404	9,525	4,76	3,81	0,4	●	●			
		TNGA160404T01525	9,525	4,76	3,81	0,4		●			
		TNGA160408	9,525	4,76	3,81	0,8	●	●			
		TNGA160408 T01525	9,525	4,76	3,81	0,8		●			
		TNGA160412	9,525	4,76	3,81	1,2		●			
		TNGA160412 T01525	9,525	4,76	3,81	1,2		●			
		TNGN110304	6,35	3,18	-	0,4	●				
		TNGN110304T01525	6,35	3,18	-	0,4		●			
		TNGN110308	6,35	3,18	-	0,8		●			
		TNGN160404 T01525	9,525	4,76	-	0,4		●			
		TNGN160408	9,525	4,76	-	0,8		●			
		TNGN160408 T01525	9,525	4,76	-	0,8		●			
		TNGN160412	9,525	4,76	-	1,2		●			
		TNGN160708	9,525	7,94	-	0,8	●	●			
		TNGN160712	9,525	7,94	-	1,2		●			
		TNGN160716	9,525	7,94	-	1,6		●			
		VNGA160404	9,525	4,76	3,81	0,4		●			
		VNGA160404 T01525	9,525	4,76	3,81	0,4		●			
		VNGA160408	9,525	4,76	3,81	0,8		●			
		VNGA160408 T01525	9,525	4,76	3,81	0,8		●			
		VNGA160412 T01525	9,525	4,76	3,81	1,2		●			
		WNGA080408	12,70	4,76	5,16	0,8		●			

● Stock Standard ○ Non Stock Standard

Ceramic

■ Positive

Edge Preparation of Positive insert	
A65 / **A66N** (without indication)	0.08 mm x 20°
-T01525	0.15 mm x 25°
-T01230R	0.12 mm x 30° + hone
RCGX / RCMA - type	2.03 mm x 15° + 0.15 x 25° + hone

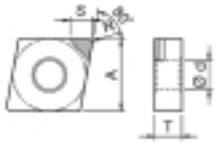
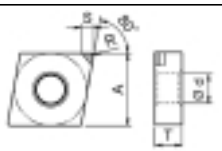
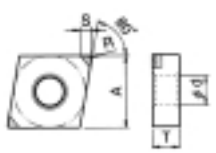
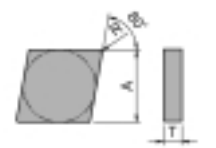
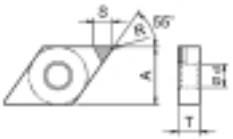
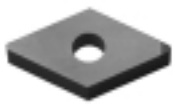
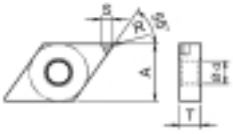
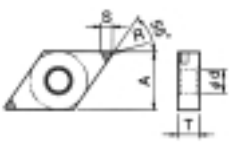
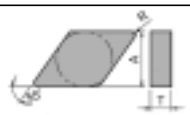
SHAPE		DESCRIPTION	DIMENSION (mm)				ANGLE (°)	AVAILABILITY				
			A	T	Ø d	R	α	A65	A66N			
		RCGX090700	9,525	8,00	-	-	7°	●	●			
		RCGX120700	12,70	8,00	-	-	7°	●	●			
		RCGX191000	19,05	10,00	-	-	7°	●				
		RCGX251200	25,40	12,00	-	-	7°	●				
		RCMA251200	25,40	12,70	6,76	-	7°	●				
		SPGN120304	12,70	3,18	-	0,4	11°		●			
		SPGN120308	12,70	3,18	-	0,8	11°		●			
		TBGN060102	3,97	1,59	-	0,2	5°		●			
		TBGN060104	3,97	1,59	-	0,4	5°		●			
		TBGN060108	3,97	1,59	-	0,8	5°		●			
		TPGN110302	6,35	3,18	-	0,2	11°		●			
		TPGN110304	6,35	3,18	-	0,4	11°	●	●			
		TPGN110304T01230R	6,35	3,18	-	0,4	11°		●			
		TPGN110308	6,35	3,18	-	0,8	11°	●	●			
		TPGN110308T01230R	6,35	3,18	-	0,8	11°		●			
		TPGN160302	9,525	3,18	-	0,2	11°	●				
		TPGN160304	9,525	3,18	-	0,4	11°	●	●			
		TPGN160308	9,525	3,18	-	0,8	11°	●	●			
		TPGN160312	9,525	3,18	-	1,2	11°		●			
		TPGN160312 T01525	9,525	3,18	-	1,2	11°		●			

● Stock Standard ○ Non Stock Standard

CBN

■ Negative

Edge Preparation of Negative insert	
KBN10B without indication, **-SE, -S2E, -S3E**	0.12 mm x 25°
KBN25B without indication, **-SE, -S2E, -S3E**	0.12 mm x 25°
KBN25B -ME-T	0.17 mm x 30° + hone
KBN900 -S	0.20 mm x 20° + hone
KBN900 -S04015	0.40 mm x 15° + hone
KBN900 -S20015	2.00 mm x 15° + hone

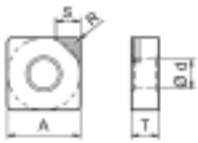
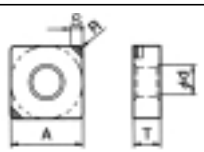
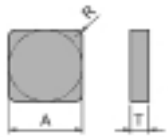
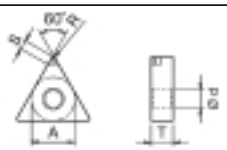
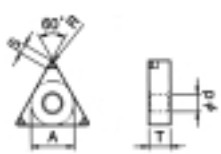
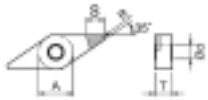
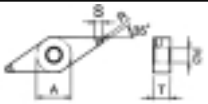
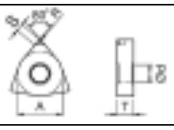
SHAPE	DESCRIPTION	DIMENSION (mm)					AVAILABILITY				
		A	T	Ø d	R	S	KBN10B	KBN25B	KBN900		
 	CNGA120412	12,70	4,76	5,16	1,2	3,5	●				
 	CNGA120404SE	12,70	4,76	5,16	0,4	2,0	●				
	CNGA120408SE	12,70	4,76	5,16	0,8	2,0	●				
	CNGA120412SE	12,70	4,76	5,16	1,2	2,2	●				
 	CNGA120402S2E	12,70	4,76	5,16	0,2	2,1	●				
	CNGA120404S2E	12,70	4,76	5,16	0,4	2,0	●	●			
	CNGA120408S2E	12,70	4,76	5,16	0,8	2,0	●	●			
	CNGA120412S2E	12,70	4,76	5,16	1,2	2,2		●			
	CNGA120404ME-T	12,70	4,76	5,16	0,4	2,0		●			
	CNGA120408ME-T	12,70	4,76	5,16	0,8	2,0		●			
	CNGA120412ME-T	12,70	4,76	5,16	1,2	2,2		●			
 	CNMN090308S	9,525	3,18	-	0,8	-			●		
	CNMN090312S	9,525	3,18	-	1,2	-			●		
	CNMN120412S	12,70	4,76	-	1,2	-			●		
	CNMN120412S04015	12,70	4,76	-	1,2	-			●		
	CNMN120416S	12,70	4,76	-	1,6	-			●		
	CNMN120416S04015	12,70	4,76	-	1,6	-			●		
 	DNGA150404	12,70	4,76	5,16	0,4	5,7	●				
	DNGA150408	12,70	4,76	5,16	0,8	5,3	●	●			
 	DNGA150408SE	12,70	4,76	5,16	0,8	2,0		●			
	DNGA150604SE	12,70	6,35	5,16	0,4	2,4	●				
	DNGA150608SE	12,70	6,35	5,16	0,8	2,0	●				
 	DNGA150408S2E	12,70	4,76	5,16	0,8	2,0	●				
	DNGA150604S2E	12,70	6,35	5,16	0,4	2,4		●			
	DNGA150608S2E	12,70	6,35	5,16	0,8	2,0		●			
	DNGA150612S2E	12,70	6,35	5,16	1,2	1,7		●			
	DNGA150604ME-T	12,70	6,35	5,16	0,4	2,4		●			
	DNGA150608ME-T	12,70	6,35	5,16	0,8	2,0		●			
	DNGA150612ME-T	12,70	6,35	5,16	1,2	1,7		●			
 	DNMN110308S	9,525	3,18	-	0,8	-			●		
	DNMN110312S	9,525	3,18	-	1,2	-			●		

● Stock Standard ○ Non Stock Standard

CBN

■ Negative

Edge Preparation of Negative insert	
KBN10B without indication, **-SE, -S2E, -S3E**	0.12mm x 25°
KBN25B without indication, **-SE, -S2E, -S3E**	0.12mm x 25°
KBN25B -ME-T	0.17mm x 30° + hone
KBN900 -S	0.20mm x 20° + hone
KBN900 -S04015	0.40mm x 15° + hone
KBN900 -S20015	0.20mm x 15° + hone

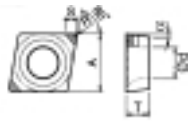
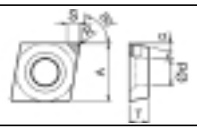
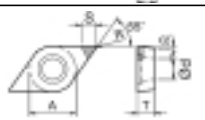
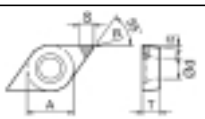
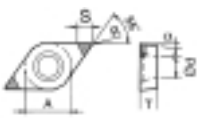
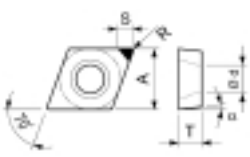
SHAPE		DESCRIPTION	DIMENSION (mm)					AVAILABILITY				
			A	T	Ø d	R	S	KBN10B	KBN25B	KBN900		
		RNMN060300S	6,35	3,18	-	-	-			●		
		RNMN090300S	9,525	3,18	-	-	-			●		
		RNMN120300S	12,70	3,18	-	-	-			●		
		RNMN120400S	12,70	4,76	-	-	-			●		
		RNMN120400S04015	12,70	4,76	-	-	-			●		
		RNMN250400S20015	25,40	4,76	-	-	-			●		
		SNGA120408	12,70	4,76	5,16	0,8	4,0		●			
		SNGA120404S2E	12,70	4,76	5,16	0,4	1,9		●			
		SNGA120408S2E	12,70	4,76	5,16	0,8	2,0	●	●			
		SNGA120404ME-T	12,70	4,76	5,16	0,4	1,9		●			
		SNGA120408ME-T	12,70	4,76	5,16	0,8	2,0		●			
		SNGA120412ME-T	12,70	4,76	5,16	1,2	1,7		●			
		SNMN120408S	12,70	4,76	-	0,8	-			●		
		SNMN120412S	12,70	4,76	-	1,2	-			●		
		SNMN120412S04015	12,70	4,76	-	1,2	-			●		
		SNMN120416S04015	12,70	4,76	-	1,6	-			●		
		TNGA160404SE	9,525	4,76	3,81	0,4	1,8	●				
		TNGA160408SE	9,525	4,76	3,81	0,8	1,6	●				
		TNGA160404S3E	9,525	4,76	3,81	0,4	1,8		●			
		TNGA160408S3E	9,525	4,76	3,81	0,8	1,6		●			
		TNGA160412S3E	9,525	4,76	3,81	1,2	1,8		●			
		TNGA160404ME-T	9,525	4,76	3,81	0,4	1,8		●			
		TNGA160408ME-T	9,525	4,76	3,81	0,8	1,6		●			
		TNGA160412ME-T	9,525	4,76	3,81	1,2	1,8		●			
		VNGA160404	9,525	4,76	3,81	0,4	4,7	●	●			
		VNGA160404SE	9,525	4,76	3,81	0,4	2,1	●				
		VNGA160408SE	9,525	4,76	3,81	0,4	1,8	●				
		VNGA160402S2E	9,525	4,76	3,81	0,2	2,3	●				
		VNGA160404S2E	9,525	4,76	3,81	0,4	2,1	●				
		VNGA160408S2E	9,525	4,76	3,81	0,8	1,8	●	●			
		VNGA160408ME-T	9,525	4,76	3,81	0,8	1,8		●			
		WNGA080408SE	12,70	4,76	5,16	0,8	2,0		●			

● Stock Standard ○ Non Stock Standard

CBN

■ Positive

Edge Preparation of Positive insert	
KBN10B without indication, **-SE, -S2E**	0.12mm x 15°
KBN25B without indication, **-SE, -S2E**	0.12mm x 15°
KBN25B -ME-T	0.17mm x 35° + hone

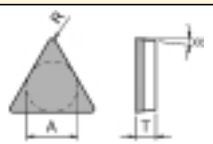
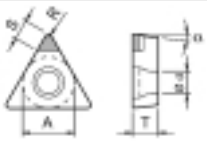
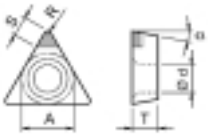
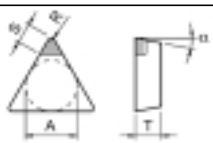
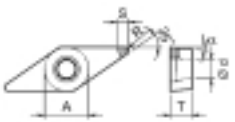
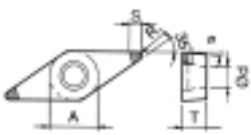
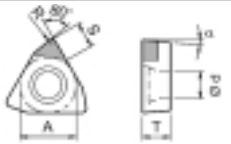
SHAPE		DESCRIPTION	DIMENSION (mm)					ANGLE(°)	AVAILABILITY				
			A	T	Ø d	R	S	α	KBN10B	KBN25B	KBN900		
		CCMW060202SE	6,35	2,38	2,8	0,2	2,1	7°	●				
		CCMW060204SE	6,35	2,38	2,8	0,4	2,0	7°	●				
		CCMW09T304SE	9,525	3,97	4,4	0,4	2,0	7°	●				
		CCMW09T308SE	9,525	3,97	4,4	0,8	2,0	7°	●				
		CCMW030102S2E	3,5	1,4	1,9	0,2	1,6	7°	●	●			
		CCMW030104S2E	3,5	1,4	1,9	0,4	1,5	7°	●				
		CCMW060202S2E	6,35	2,38	2,8	0,2	2,1	7°		●			
		CCMW060204S2E	6,35	2,38	2,8	0,4	2,0	7°	●	●			
		CCMW09T302S2E	9,525	3,97	4,4	0,2	2,1	7°	●				
		CCMW09T304S2E	9,525	3,97	4,4	0,4	2,0	7°	●	●			
		CCMW09T308S2E	9,525	3,97	4,4	0,8	2,0	7°	●	●			
		CCMW120412S2E	12,70	4,76	5,5	1,2	2,0	7°	●				
		CCMW09T304ME-T	9,525	3,97	4,4	0,4	2,0	7°		●			
		CPGB080204SE	7,94	2,38	3,5	0,4	2,0	11°	●				
		DCMW11T304	9,525	3,97	4,4	0,4	3,4	7°	●				
		DCMW11T308	9,525	3,97	4,4	0,8	3,0	7°	●				
		DCMW070202SE	6,35	2,38	2,8	0,2	2,0	7°	●				
		DCMW070204SE	6,35	2,38	2,8	0,4	1,8	7°	●				
		DCMW11T304SE	9,525	3,97	4,4	0,4	1,8	7°	●				
		DCMW11T308SE	9,525	3,97	4,4	0,8	1,5	7°	●				
		DCMW070202S2E	6,35	2,38	2,8	0,2	2,0	7°	●	●			
		DCMW070204S2E	6,35	2,38	2,8	0,4	1,8	7°	●	●			
		DCMW11T302S2E	9,525	3,97	4,4	0,2	2,0	7°	●	●			
		DCMW11T304S2E	9,525	3,97	4,4	0,4	1,8	7°	●	●			
		DCMW11T308S2E	9,525	3,97	4,4	0,8	1,5	7°		●			
		DCMW11T302ME-T	9,525	3,97	4,4	0,2	2,0	7°		●			
		DCMW11T304ME-T	9,525	3,97	4,4	0,4	1,8	7°		●			
		DCMW11T308ME-T	9,525	3,97	4,4	0,8	1,5	7°		●			
		JCGW030102SE	3,5	1,40	1,9	0,2	1,5	7°	●				

● Stock Standard ○ Non Stock Standard

CBN

■ Positive

Edge Preparation of Positive insert	
KBN10B without indication, **-SE, -S2E**	0.12mm x 15°
KBN25B without indication, **-SE, -S2E**	0.12mm x 15°
KBN25B -ME-T	0.17mm x 35°

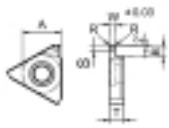
SHAPE		DESCRIPTION	DIMENSION (mm)					ANGLE(°)	AVAILABILITY				
			A	T	Ø d	R	S	α	KBN10B	KBN25B	KBN900		
		TBGN060102	3,97	1,59	-	0,2	-	5°	●	●			
		TBGN060104	3,97	1,59	-	0,4	-	5°	●	●			
		TBGN060108	3,97	1,59	-	0,8	-	5°	●	●			
		TCMW110202SE	6,35	2,38	2,8	0,2	2,0	7°		●			
		TCMW110204SE	6,35	2,38	2,8	0,4	1,9	7°		●			
		TCMW110208SE	6,35	2,38	2,8	0,8	1,6	7°		●			
		TPGB080202SE	4,76	2,38	2,5	0,2	1,9	11°	●				
		TPGB080204SE	4,76	2,38	2,5	0,4	1,8	11°	●				
		TPGB090202SE	5,56	2,38	3,0	0,2	1,9	11°	●	●			
		TPGB090204SE	5,56	2,38	3,0	0,4	1,8	11°	●	●			
		TPGB110301SE	6,35	3,18	3,5	0,1	2,0	11°	●				
		TPGB110302SE	6,35	3,18	3,5	0,2	1,9	11°	●				
		TPGB110304SE	6,35	3,18	3,5	0,4	1,8	11°	●	●			
		TPGB110308SE	6,35	3,18	3,5	0,8	1,5	11°		●			
		TPGN110304SE	6,35	3,18	-	0,4	1,8	11°	●				
		TPGN110308SE	6,35	3,18	-	0,8	1,5	11°	●				
		TPGN160304SE	9,525	3,18	-	0,4	1,8	11°		●			
		TPGN160308SE	9,525	3,18	-	0,8	1,5	11°		●			
		VBMW160404	9,525	4,76	4,4	0,4	5,0	5°	●				
		VBMW160408	9,525	4,76	4,4	0,8	4,1	5°	●				
		VBGW110304SE	6,35	3,18	2,8	0,4	2,1	5°	●				
		VBMW160404SE	9,525	4,76	4,4	0,4	2,1	5°	●				
		VBMW160408SE	9,525	4,76	4,4	0,8	1,8	5°	●				
		VBGW160404S2E	9,525	4,76	4,4	0,4	2,1	5°		●			
		VBGW160408S2E	9,525	4,76	4,4	0,8	1,8	5°		●			
		VBGW160404ME-T	9,525	4,76	4,4	0,4	2,1	5°		●			
		VCGW080202S2E	4,76	2,38	2,3	0,2	2,5	7°	●				
		VCGW080204S2E	4,76	2,38	2,3	0,4	2,1	7°	●				
		VCGW080208S2E	4,76	2,38	2,3	0,8	1,8	7°	●				
		WBGW060104L-SE	3,97	1,59	2,3	0,4	2,0	5°	●				
		WBGW060104R-SE	3,97	1,59	2,3	0,4	2,0	5°	●				
		WBGW080202L-SE	4,76	2,38	2,3	0,2	2,5	5°	●				
		WBGW080204L-SE	4,76	2,38	2,3	0,4	2,4	5°	●				
		WBGW080204R-SE	4,76	2,38	2,3	0,4	2,4	5°	●				

● Stock Standard ○ Non Stock Standard

CBN

■ Grooving (GBA)

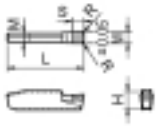
Edge Preparation of Positive insert	
KBN10B	0.16mm x 20°

SHAPE		DESCRIPTION	DIMENSION (mm)								AVAILABILITY				
			W	B	R	A	T	Ø d	S		KBN10B	KBN25B	KBN900		
		GBA43R125	1.25	2.0	0.2	12.70	4.76	5.5	1.7		●				
		GBA43R150	1.50	3.5	0.2	12.70	4.76	5.5	1.7		●				
		GBA43R200	2.00	3.5	0.2	12.70	4.76	5.5	1.7		●				
		GBA43R250	2.50	4.0	0.2	12.70	4.76	5.5	1.7		●				
		GBA43R300	3.00	4.0	0.2	12.70	4.76	5.5	1.7		●				

● Stock Standard ○ Non Stock Standard

■ Grooving (GMN)

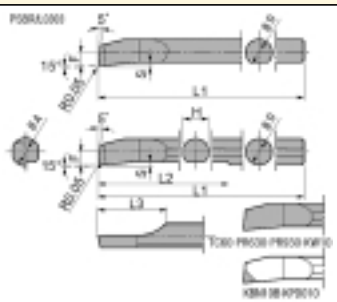
Edge Preparation of Positive insert	
KBN10B	0.16mm x 20°

SHAPE		DESCRIPTION	DIMENSION (mm)								AVAILABILITY				
			W	R	L	H	M	S			KBN10B	KBN25B	KBN900		
		GMN2	2.0	0.4	19.8	4.3	1.8	2.7			○				
		GMN3	3.0	0.4	19.8	4.3	2.3	2.7			●				
		GMN4	4.0	0.4	19.8	4.3	3.3	2.7			●				
		GMN5	5.0	0.4	19.8	4.3	4.2	2.7			○				
		GMN6	6.0	0.4	19.8	4.3	5.2	2.7			○				

● Stock Standard ○ Non Stock Standard

■ TIP-BAR (PSBR)

Edge Preparation of Positive insert	
KBN10B	R0.06~0.09mm x 15°

SHAPE	DESCRIPTION	Min.Bore Ø A	DIMENSION (mm)								AVAILABILITY				
			Ø D	H	L1	L2	L3	F	S	R	KBN10B	KBN25B	KBN900		
	PSBR0303-50NBS	3	2.8	–	50	25	7	1.4	0.15	0.05	●				
	PSBR0404-60NBS	4	3.8	3.6	60	30	10	1.9	0.30	0.05	●				
	PSBR0505-70NBS	5	4.8	4.4	70	40	12	2.4	0.50	0.05	●				
	PSBR0606-70NBS	6	5.8	5.2	70	45	12	2.9	0.50	0.05	●				
	PSBR0707-80NBS	7	6.8	6.2	80	50	12	3.4	0.50	0.05	●				

● Stock Standard ○ Non Stock Standard

NOTES

JQA QUALITY MANAGEMENT SYSTEM ASSESSMENT AND REGISTRATION SCHEME

Certificate of Registration

CERTIFIED JQA MANAGEMENT SYSTEM
QUALITY SYSTEM

Certificate Number JQA-0410

JQA,ISO Certification Center, hereby certifies that the Organization,

KYOCERA CORPORATION
CUTTING TOOL DIVISION
6 TAKEDATOBADONO-CHO, FUSHIMI-KU, KYOTO-SHI, KYOTO, JAPAN

Accredited by RvA

operates a Quality Management System which has been assessed and found to comply with the requirements of :

ISO 9001:1994 / BS EN ISO 9001:1994 / EN ISO 9001:1994
/ JIS Z9901:1998

JAB
QS Accreditation
R009

Date of Original Issue : February 21, 1994
Date of Last Revision : September 10, 1999

IQNet

K. Sakuma
KENJI SAKUMA
PRESIDENT

C. Morita
ISO CERTIFICATION CENTER
CHIKAFUMI MORITA
BOARD DIRECTOR

To be used in conjunction with attached Appendix.

JAPAN QUALITY ASSURANCE ORGANIZATION
JQA

98.8 D7501006

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