



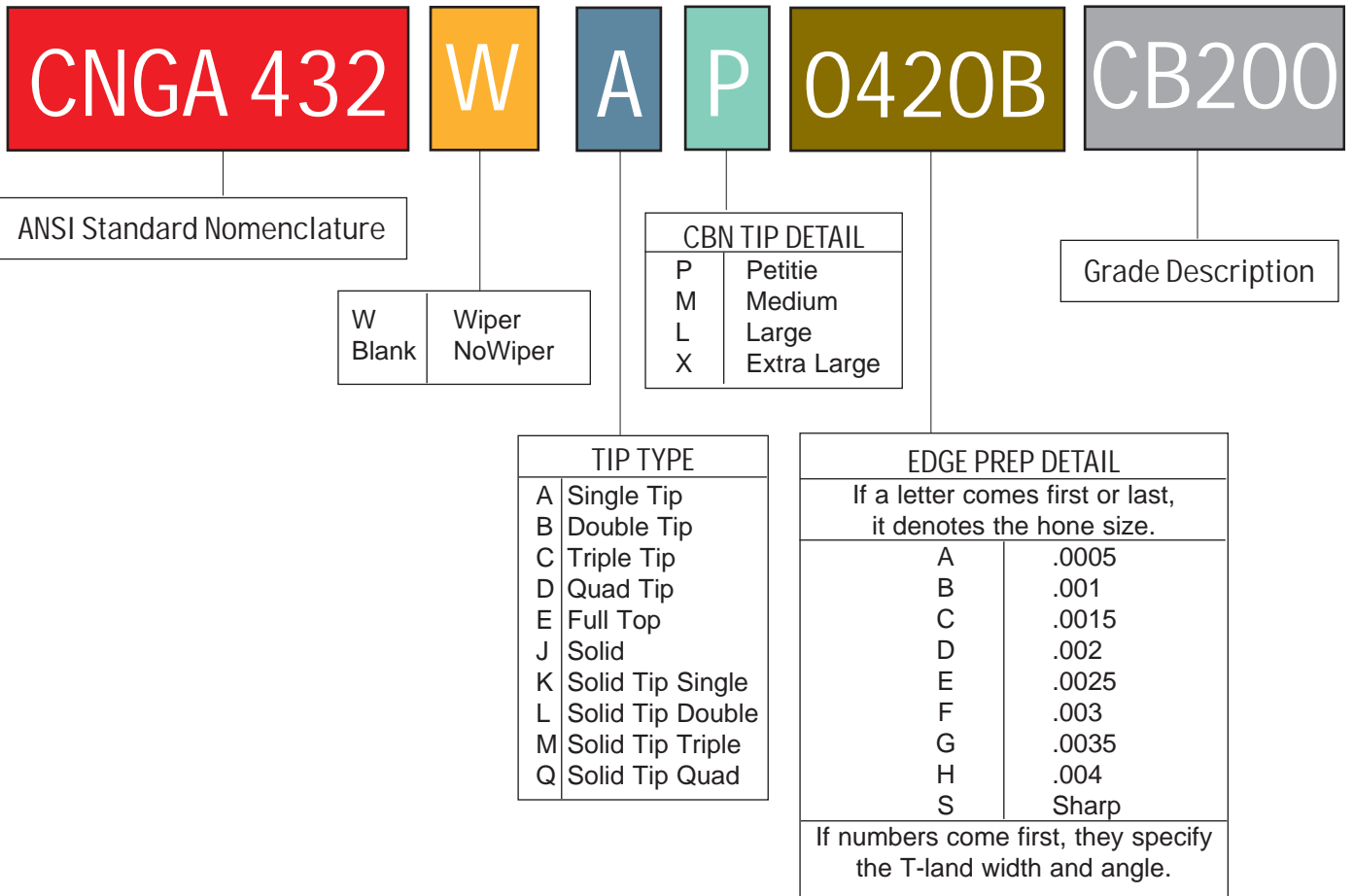
TOOL FLO



PCBM



PCBN - Polycrystalline Cubic Boron Nitride Insert Nomenclature Chart



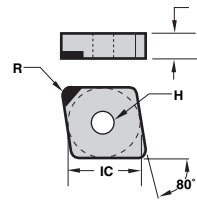
PCBN Grade Descriptions

Grades	Descriptions
CB200	A high CBN content, PCBN tip brazed onto a carbide insert. Superior impact resistance. Ideally suited for machining cast iron and powder metal alloys, fully pearlitic gray cast iron, chilled irons; excellent results in high temperature alloys such as Inconel with an up sharp edge. Apply to tool steels and hard steels 45 HRC and higher; high chrome alloy steels. Application ranges from continuous to highly interrupted cuts.
CB400	A low CBN content, PCBN tip brazed onto a carbide insert. Ideally suited for roughing to finishing of hardened steels 45 HRC and higher. Use on bearing steel, hot and cold work steels, die steels, case hardened steels, carburized and nitrided irons.



SINGLE TIP PCBN CNGA

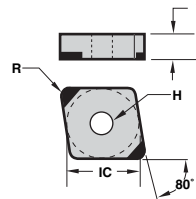
For Holders see pg. 202-203



Insert Description	IC	R	T	H	Edge Prep	CB200	CB400
CNGA-431 APS	.500	.015	.187	.203	Sharp	●	●
CNGA-432 APS	.500	.031	.187	.203	Sharp	●	●
CNGA-433 APS	.500	.047	.187	.203	Sharp	●	●
CNGA-431 AP 0420A	.500	.015	.187	.203	T-Land W=.004, Angle 20°	●	●
CNGA-432 AP 0420A	.500	.031	.187	.203	T-Land W=.004, Angle 20°	●	●
CNGA-433 AP 0420A	.500	.047	.187	.203	T-Land W=.004, Angle 20°	●	●
CNGA-431 AL 0420A	.500	.015	.187	.203	T-Land W=.004, Angle 20°	●	●
CNGA-432 AL 0420A	.500	.031	.187	.203	T-Land W=.004, Angle 20°	●	●
CNGA-433 AL 0420A	.500	.047	.187	.203	T-Land W=.004, Angle 20°	●	●

DOUBLE TIP PCBN CNGA

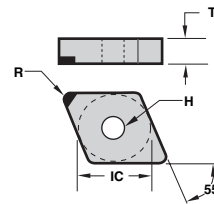
For Holders see pg. 202-203



Insert Description	IC	R	T	H	Wiper	Edge Prep	CB200	CB400
CNGA-431 BPS	.500	.015	.187	.203		Sharp	●	●
CNGA-432 BPS	.500	.031	.187	.203		Sharp	●	●
CNGA-433 BPS	.500	.047	.187	.203		Sharp	●	●
CNGA-431 BP 0420A	.500	.015	.187	.203		T-Land W=.004, Angle 20°	●	●
CNGA-432 BP 0420A	.500	.031	.187	.203		T-Land W=.004, Angle 20°	●	●
CNGA-433 BP 0420A	.500	.047	.187	.203		T-Land W=.004, Angle 20°	●	●
CNGA-431 WBP 0420A	.500	.015	.187	.203	✓	T-Land W=.004, Angle 20°	●	●
CNGA-432 WBP 0420A	.500	.031	.187	.203	✓	T-Land W=.004, Angle 20°	●	●
CNGA-433 WBP 0420A	.500	.047	.187	.203	✓	T-Land W=.004, Angle 20°	●	●

SINGLE TIP PCBN DNGA

For Holders see pg. 204



Insert Description	IC	R	T	H	Edge Prep	CB200	CB400
DNGA-431 APS	.500	.015	.187	.203	Sharp	●	●
DNGA-432 APS	.500	.031	.187	.203	Sharp	●	●
DNGA-433 APS	.500	.047	.187	.203	Sharp	●	●
DNGA-431 AP 0420A	.500	.015	.187	.203	T-Land W=.004, Angle 20°	●	●
DNGA-432 AP 0420A	.500	.031	.187	.203	T-Land W=.004, Angle 20°	●	●
DNGA-433 AP 0420A	.500	.047	.187	.203	T-Land W=.004, Angle 20°	●	●
DNGA-431 AL 0420A	.500	.015	.187	.203	T-Land W=.004, Angle 20°	●	●
DNGA-432 AL 0420A	.500	.031	.187	.203	T-Land W=.004, Angle 20°	●	●
DNGA-433 AL 0420A	.500	.047	.187	.203	T-Land W=.004, Angle 20°	●	●

In an effort to improve our stock standard grade offering, there are periodic changes. Please see current price list for up to date grade offering.

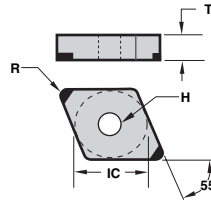
- High performance choice in optimal conditions.
- ▲ Recommended grade under general conditions.

Cast Irons	●	
Hardened & Bearing Steel		●
Powdered Metals	●	
Super Alloys	●	



DOUBLE TIP PCBN DNGA

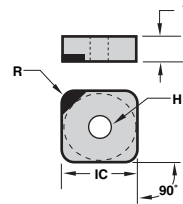
For Holders see pg. 204



Insert Description	IC	R	T	H	Wiper	Edge Prep	CB200	CB400
							●	●
DNGA-431 BPS	.500	.015	.187	.203		Sharp	●	●
DNGA-432 BPS	.500	.031	.187	.203		Sharp	●	●
DNGA-433 BPS	.500	.047	.187	.203		Sharp	●	●
DNGA-431 BP 0420A	.500	.015	.187	.203		T-Land W=.004, Angle 20°	●	●
DNGA-432 BP 0420A	.500	.031	.187	.203		T-Land W=.004, Angle 20°	●	●
DNGA-433 BP 0420A	.500	.047	.187	.203		T-Land W=.004, Angle 20°	●	●
DNGA-431 WBP 0420A	.500	.015	.187	.203	✓	T-Land W=.004, Angle 20°	●	●
DNGA-432 WBP 0420A	.500	.031	.187	.203	✓	T-Land W=.004, Angle 20°	●	●
DNGA-433 WBP 0420A	.500	.047	.187	.203	✓	T-Land W=.004, Angle 20°	●	●

SINGLE TIP PCBN SNGA

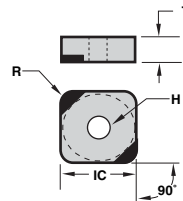
For Holders see pg. 205-206



Insert Description	IC	R	T	H	Edge Prep	CB200	CB400
						●	●
SNGA-431 APS	.500	.015	.187	.203	Sharp	●	●
SNGA-432 APS	.500	.031	.187	.203	Sharp	●	●
SNGA-433 APS	.500	.047	.187	.203	Sharp	●	●
SNGA-431 AP 0420A	.500	.015	.187	.203	T-Land W=.004, Angle 20°	●	●
SNGA-432 AP 0420A	.500	.031	.187	.203	T-Land W=.004, Angle 20°	●	●
SNGA-433 AP 0420A	.500	.047	.187	.203	T-Land W=.004, Angle 20°	●	●
SNGA-431 AL 0420A	.500	.015	.187	.203	T-Land W=.004, Angle 20°	●	●
SNGA-432 AL 0420A	.500	.031	.187	.203	T-Land W=.004, Angle 20°	●	●
SNGA-433 AL 0420A	.500	.047	.187	.203	T-Land W=.004, Angle 20°	●	●

DOUBLE TIP PCBN SNGA

For Holders see pg. 205-206



Insert Description	IC	R	T	H	Wiper	Edge Prep	CB200	CB400
							●	●
SNGA-431 BPS	.500	.015	.187	.203		Sharp	●	●
SNGA-432 BPS	.500	.031	.187	.203		Sharp	●	●
SNGA-433 BPS	.500	.047	.187	.203		Sharp	●	●
SNGA-431 BP 0420A	.500	.015	.187	.203		T-Land W=.004, Angle 20°	●	●
SNGA-432 BP 0420A	.500	.031	.187	.203		T-Land W=.004, Angle 20°	●	●
SNGA-433 BP 0420A	.500	.047	.187	.203		T-Land W=.004, Angle 20°	●	●
SNGA-431 WBP 0420A	.500	.015	.187	.203	✓	T-Land W=.004, Angle 20°	●	●
SNGA-432 WBP 0420A	.500	.031	.187	.203	✓	T-Land W=.004, Angle 20°	●	●
SNGA-433 WBP 0420A	.500	.047	.187	.203	✓	T-Land W=.004, Angle 20°	●	●

In an effort to improve our stock standard grade offering, there are periodic changes. Please see current price list for up to date grade offering.

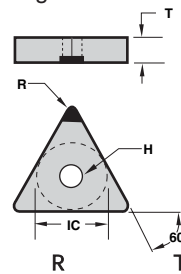
● High performance choice in optimal conditions.
▲ Recommended grade under general conditions.

Cast Irons	●
Hardened & Bearing Steel	●
Powdered Metals	●
Super Alloys	●



SINGLE TIP PCBN TNGA

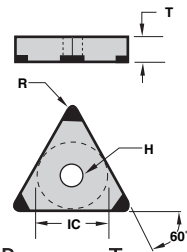
For Holders see pg. 206-209



Insert Description	IC	R	T	H	Edge Prep	CB200	CB400
TNGA-431 APS	.500	.015	.187	.203	Sharp	●	●
TNGA-432 APS	.500	.031	.187	.203	Sharp	●	●
TNGA-433 APS	.500	.047	.187	.203	Sharp	●	●
TNGA-431 AP 0420A	.500	.015	.187	.203	T-Land W=.004, Angle 20°	●	●
TNGA-432 AP 0420A	.500	.031	.187	.203	T-Land W=.004, Angle 20°	●	●
TNGA-433 AP 0420A	.500	.047	.187	.203	T-Land W=.004, Angle 20°	●	●
TNGA-431 AL 0420A	.500	.015	.187	.203	T-Land W=.004, Angle 20°	●	●
TNGA-432 AL 0420A	.500	.031	.187	.203	T-Land W=.004, Angle 20°	●	●
TNGA-433 AL 0420A	.500	.047	.187	.203	T-Land W=.004, Angle 20°	●	●

TRIPLE TIP PCBN TNGA

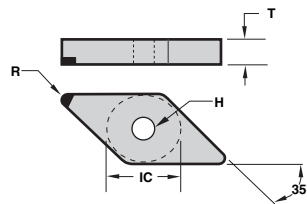
For Holders see pg. 206-209



Insert Description	IC	R	T	H	Wiper	Edge Prep	CB200	CB400
TNGA-431 CPS	.500	.015	.187	.203		Sharp	●	●
TNGA-432 CPS	.500	.031	.187	.203		Sharp	●	●
TNGA-433 CPS	.500	.047	.187	.203		Sharp	●	●
TNGA-431 CP 0420A	.500	.015	.187	.203		T-Land W=.004, Angle 20°	●	●
TNGA-432 CP 0420A	.500	.031	.187	.203		T-Land W=.004, Angle 20°	●	●
TNGA-433 CP 0420A	.500	.047	.187	.203		T-Land W=.004, Angle 20°	●	●
TNGA-431 WCP 0420A	.500	.015	.187	.203	✓	T-Land W=.004, Angle 20°	●	●
TNGA-432 WCP 0420A	.500	.031	.187	.203	✓	T-Land W=.004, Angle 20°	●	●
TNGA-433 WCP 0420A	.500	.047	.187	.203	✓	T-Land W=.004, Angle 20°	●	●

SINGLE TIP PCBN VNGA

For Holders see pg. 209-210



Insert Description	IC	R	T	H	Edge Prep	CB200	CB400
VNGA-431 APS	.500	.015	.187	.203	Sharp	●	●
VNGA-432 APS	.500	.031	.187	.203	Sharp	●	●
VNGA-433 APS	.500	.047	.187	.203	Sharp	●	●
VNGA-431 AP 0420A	.500	.015	.187	.203	T-Land W=.004, Angle 20°	●	●
VNGA-432 AP 0420A	.500	.031	.187	.203	T-Land W=.004, Angle 20°	●	●
VNGA-433 AP 0420A	.500	.047	.187	.203	T-Land W=.004, Angle 20°	●	●
VNGA-431 AL 0420A	.500	.015	.187	.203	T-Land W=.004, Angle 20°	●	●
VNGA-432 AL 0420A	.500	.031	.187	.203	T-Land W=.004, Angle 20°	●	●
VNGA-433 AL 0420A	.500	.047	.187	.203	T-Land W=.004, Angle 20°	●	●

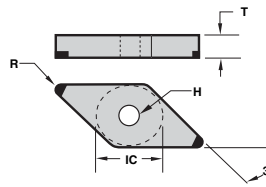
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- High performance choice in optimal conditions.
- ▲ Recommended grade under general conditions.

Cast Irons	●	
Hardened & Bearing Steel		●
Powdered Metals	●	
Super Alloys	●	

172 DOUBLE TIP PCBN VNGA

PCBN Grooving Inserts

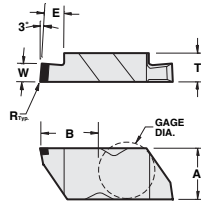


For Holders see pg. 209-210

Insert Description	IC	R	T	H	Wiper	Edge Prep	CB200	CB400
							●	●
VNGA-431 BPS	.500	.015	.187	.150		Sharp	●	●
VNGA-432 BPS	.500	.031	.187	.150		Sharp	●	●
VNGA-433 BPS	.500	.047	.187	.150		Sharp	●	●
VNGA-431 BP 0420A	.500	.015	.187	.150		T-Land W=.004, Angle 20°	●	●
VNGA-432 BP 0420A	.500	.031	.187	.150		T-Land W=.004, Angle 20°	●	●
VNGA-433 BP 0420A	.500	.047	.187	.150		T-Land W=.004, Angle 20°	●	●
VNGA-431 WBP 0420A	.500	.015	.187	.150	✓	T-Land W=.004, Angle 20°	●	●
VNGA-432 WBP 0420A	.500	.031	.187	.150	✓	T-Land W=.004, Angle 20°	●	●
VNGA-433 WBP 0420A	.500	.047	.187	.150	✓	T-Land W=.004, Angle 20°	●	●

SINGLE TIP PCBN GROOVING FLG

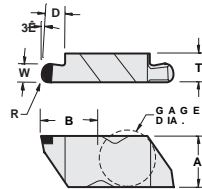
For Holders see pg. 111-113



Insert Description	W	R	T	H	E	Edge Prep	CB200	CB400
							●	●
FLG-3047L APB	.047	.005/.010	.195	.219	.075	.001 Hone	●	●
FLG-3047R APB	.047	.005/.010	.195	.219	.075	.001 Hone	●	●
FLG-3062L APB	.062	.005/.010	.195	.219	.120	.001 Hone	●	●
FLG-3062R APB	.062	.005/.010	.195	.219	.120	.001 Hone	●	●
FLG-3094L AMB	.094	.005/.010	.195	.219	.180	.001 Hone	●	●
FLG-3094R AMB	.094	.005/.010	.195	.219	.180	.001 Hone	●	●
FLG-3125L AMB	.125	.005/.010	.195	.219	.180	.001 Hone	●	●
FLG-3125R AMB	.125	.005/.010	.195	.219	.180	.001 Hone	●	●
FLG-3189L ALB	.189	.020/.025	.195	.219	.180	.001 Hone	●	●
FLG-3189R ALB	.189	.020/.025	.195	.219	.180	.001 Hone	●	●
FLG-4250L ALB	.250	.020/.025	.255	.453	.250	.001 Hone	●	●
FLG-4250R ALB	.250	.020/.025	.255	.453	.250	.001 Hone	●	●

SINGLE TIP PCBN GROOVING FLR - FULL NOSE RADIUS

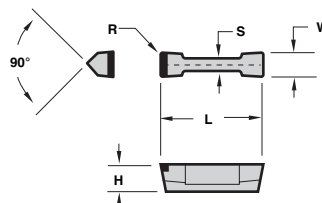
For Holders see pg. 111-113



Insert Description	W	R	T	H	E	Edge Prep	CB200	CB400
							●	●
FLR-3031L APB	.062	.031	.195	.219	.125	.001 Hone	●	●
FLR-3031R APB	.062	.031	.195	.219	.125	.001 Hone	●	●
FLR-3062L APB	.125	.062	.195	.219	.180	.001 Hone	●	●
FLR-3062R APB	.125	.062	.195	.219	.180	.001 Hone	●	●

SINGLE TIP PCBN GROOVING VDB

For Holders see pg. 227-228



Insert Description	W		R	L	H	S	Edge Prep	CB200	CB400
	Inch	mm						●	●
VDB 125 A015 AMB	.125	3,18	.015	1.125	.250	.106	.001 Hone	●	●
VDB 188 A015 ALB	.188	4,78	.015	1.125	.250	.144	.001 Hone	●	●
VDB 250 A015 ALB	.250	6,35	.015	1.125	.250	.144	.001 Hone	●	●

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- High performance choice in optimal conditions.
- ▲ Recommended grade under general conditions.

Cast Irons	●	●
Hardened & Bearing Steel	●	●
Powdered Metals	●	●
Super Alloys	●	●



workpiece material	hardened steels	grey cast irons	white alloy cast iron	super alloys	powder metal	bearing steels
CB200 high content CBN for finishing		.010 - .020 (0,25 - 0,51)	.010 - .030 (0,25 - 0,76)	.003 - .008 (0,08 - 0,20)	.003 - .008 (0,08 - 0,20)	
CB400 low content CBN for roughing	.004 - .008 (0,10 - 0,20)					.002 - .008 (0,05 - 0,20)

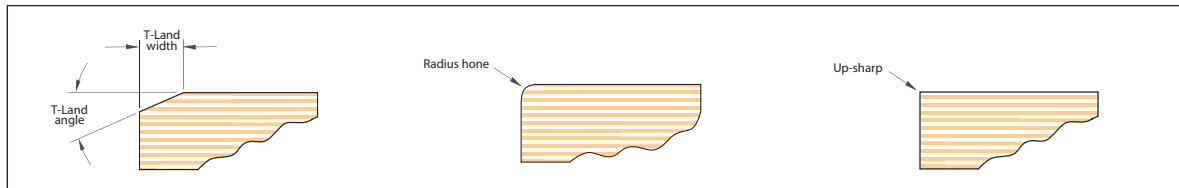
workpiece material	hardened steels	grey cast irons	white alloy cast iron	super alloys	powder metal	bearing steels
CB200 high content CBN for finishing		1500 - 3500(457 - 1067) 1000 - 2000(305 - 610)	300 - 600 (91 - 200)	500 - 1000 (152 - 305)	300 - 1000 (91 - 305)	
CB400 low content CBN for roughing	400 - 500 (122 - 152)					375 - 500 (114 - 152)

The following are suggestions for standard edge preparations.

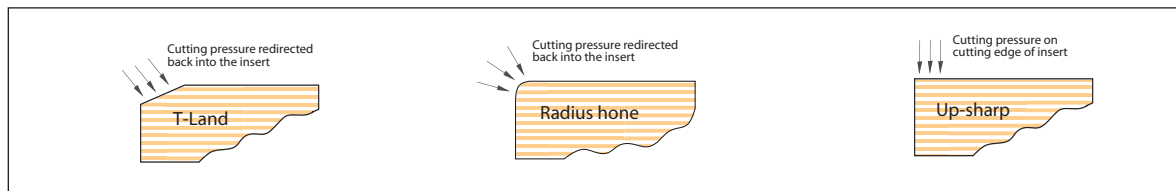
Turning	CB200	.008 x 20° and/or .001 hone
Grooving (Flo-Lock and Vee-Bottom)	CB400	.004 x 20° and/or .001 hone

Due to unique applications, special edge preparations may be

T-Land and hones protect the cutting edge by eliminating a sharp cutting edge which reduces edge chipping and breakage. Up-sharp edges are prone to chipping or breakage.



T-Land and hones strengthen the cutting edges by redirecting the cutting forces back into the insert.





NOTES:

Lined area for taking notes, consisting of numerous horizontal lines.

PCBN