



TURNING - PCBN

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ISO 513		PCBN	
		PVD COATED	UNCOATED
Cast iron	K		
	K01	NBK450C	NBK450U
	K10	NBH500C	NBH500U
	K20		NB1600U
S	K30		NBH900U
	S01	NBK450C	NBH950U
	S10		
	S20		
HRSA	S30		
	H	NBL050C	
	H01	NBL150C	
	H10	NBL200C	
Hardened steel	H20	NBL250C	NBH900U
	H30	NBL300C	NBH950U
		NBL350C	

HRSA: Heat resistant super alloy

GRADE	COMPOSITION	HARDNESS HV	COATING		APPLICATION	FEATURES
			TECHNOLOGY	COMPOSITION		
NBL050C	Low volume CBN 40%	2.700	PVD	AlTiN	H H01 H10	<ul style="list-style-type: none"> ✚ Great performance on high speed machining under continuous cutting conditions. 🇮🇹 Eccellenti prestazioni in lavorazioni a elevata velocità in condizioni di taglio continuo. 🇩🇪 Ausgezeichnete Leistung bei der Hochgeschwindigkeitsbearbeitung auf kontinuierlichen Schnittbedingungen. 🇫🇷 Extrême ténacité dans des conditions de coupe fortement interrompues.
NBL050CX	Low volume CBN 40%	2.700	PVD	AlCrN	H H01 H10	<ul style="list-style-type: none"> ✚ Same substrate of NBL050C with a different coating that enhances the sharpness of cutting edge preparation. 🇮🇹 Stesso substrato di NBL050C con un diverso rivestimento che esalta l'affilatura della preparazione del tagliente. 🇩🇪 Dasselbe Grundmaterial wie NBL050C mit anderer Beschichtung, die die Schärfe der Schneidkantenpräparation erhöht. 🇫🇷 Même substrat que le NBL050C avec un revêtement différent qui améliore l'affûtage de préparation du tranchant.
NBL150C	Low volume CBN 50%	2.900	PVD	AlTiN	H H05 H15	<ul style="list-style-type: none"> ✚ First choice for continuous cut machining. High reliability under various cutting conditions, from low to high cutting speed. 🇮🇹 Prima scelta per condizioni di taglio continuo. Alta affidabilità in differenti condizioni di taglio, per velocità di taglio da basse a elevate. 🇩🇪 Beste Wahl für kontinuierliche Schnittbedingungen. Hohe Zuverlässigkeit unter verschiedenen Schnittbedingungen, bei niedrigen bis hohen Schnittgeschwindigkeiten. 🇫🇷 Premier choix pour conditions de coupe continue. Haute fiabilité dans différentes conditions de coupe, pour vitesses de coupe lentes à élevées.
NBL200C	Low volume CBN 55%	3.000	PVD	AlTiNSi ₃ N ₄	H H10 H20	<ul style="list-style-type: none"> ✚ New universal grade mainly combined with full solid style and solid brazing. Coating layer with extreme hardness allows great wear resistance. 🇮🇹 Nuovo grado universale principalmente combinato con full solid e solid brazing. Strato di rivestimento con estrema durezza che assicura eccellente resistenza all'usura. 🇩🇪 Die neue universelle Qualität wird hauptsächlich mit den Voll-CBN Platten und den Platten mit Vertical Brazing Vollöttechnologie kombiniert. Eine extrem harte Beschichtung sorgt für eine hervorragende Verschleißfestigkeit. 🇫🇷 Nouvelle nuance universelle principalement associée au format entièrement solide et au tout brasage. Couche de revêtement extrêmement dure qui assure une excellente résistance à l'usure.
NBL250C	Low volume CBN 60%	3.200	PVD	AlTiN	H H10 H25	<ul style="list-style-type: none"> ✚ First choice for general machining even with light to medium interruptions. 🇮🇹 Prima scelta per lavorazioni generiche anche in caso di leggero o medio taglio interrotto. 🇩🇪 Erste Wahl für allgemeine Bearbeitungen unter leichten bis mittleren Schnittbedingungen. 🇫🇷 Premier choix pour usinages généraux, y compris dans des conditions de coupe avec interruptions légères à moyennes.

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NBL300C	Low volume CBN 70%	3.300	PVD	AlTiN	H	H10 H30	<ul style="list-style-type: none"> All-around grade with a perfect balance between toughness and wear resistance. Can be applied both on interrupted and continuous cut. Grado universale con un perfetto bilanciamento tra tenacità e resistenza all'usura. Può essere usato per taglio interrotto e taglio continuo. Universalqualität mit einem perfekten Verhältnis von Robustheit und Verschleißfestigkeit. Kann für unterbrochene und kontinuierliche Schneidvorgänge eingesetzt werden. Qualité universelle avec équilibre parfait entre ténacité et résistance à l'usure. Peut être utilisé dans des conditions de coupe interrompue et de coupe continue.
NBL350C	Low volume CBN 75%	3.400	PVD	AlTiN	H	H20 H35	<ul style="list-style-type: none"> Extreme toughness for heavy interrupted cut. Tenacità estrema per condizioni di taglio fortemente interrotto. Extreme Robustheit für stark unterbrochene Schnittbedingungen. Extrême ténacité dans des conditions de coupe fortement interrompues.
NBH450C	High volume CBN 95%	4.400	PVD	TiCN+TiN	K	K01 K20	<ul style="list-style-type: none"> First choice for grey cast iron finishing at very high cutting condition and with great wear resistance. Prima scelta per la finitura di ghisa grigia a velocità di taglio molto elevate e con eccellente resistenza all'usura. Erste Wahl für die Bearbeitung von Grauguss bei hohen Schnittgeschwindigkeiten und mit ausgezeichneter Verschleißfestigkeit. Premier choix pour finition de fonte grise à des vitesses de coupe très élevées, avec une excellente résistance à l'usure.
NBH450U	High volume CBN 95%	4.400	-	-	K	K01 K20	<ul style="list-style-type: none"> Same as NBH450C but uncoated. Generally suggested under interrupted conditions. Come NBH450C ma non rivestito. Generalmente consigliato per condizioni di taglio interrotto. Wie NBH450C, aber unbeschichtet. Generell empfohlen für unterbrochene Schnittbedingungen. Identique au NBH450C mais non revêtu. Généralement recommandé dans des conditions de coupe interrompues.
NBH500C	High volume CBN 90%	4.200	PVD	AlTiN	K	K10 K25	<ul style="list-style-type: none"> Main choice for grey cast iron machining with negative inserts, both for finishing and roughing. Mostly available for full solid geometries. Scelta principale per finitura e semifinitura di ghisa grigia con inserti negativi. Principalmente disponibile per geometrie integrali. Erste Wahl für das Schlichten und Schruppschichten von Grauguss mit negativen Wendeschneidplatten. Überwiegend für Voll-CBN Platten verfügbar. Premier choix pour la finition et la semi-finition de fonte grise avec plaquettes négatives. Principalement disponible pour des géométries "full" PCBN.
NBH500U	High volume CBN 90%	4.200	-	-	K	K10 K25	<ul style="list-style-type: none"> Same as NBH500C but uncoated. Generally suggested under most severe cutting conditions.. Come NBH500C ma non rivestito. Generalmente consigliato per le condizioni di taglio più gravose. Wie NBH500C, aber unbeschichtet. Generell empfohlen für schwierigste Schnittbedingungen. Identique au NBH500C mais non revêtu. Généralement recommandé dans des conditions de coupe les plus exigeantes.

NBH600U	High volume CBN 90%	3.800	-	-	K	K20 K30	<ul style="list-style-type: none"> 🇺🇸 Tough grade for severe applications on cast iron. Coarse CBN grain combined with a metallic binder for maximum stability even on interrupted cut. 🇮🇹 Grado tenace per applicazioni gravose sulla ghisa. CBN di grana grossa con legante metallico per affidabilità massima anche su taglio interrotto. 🇩🇪 Robuste Qualität für schwere Anwendungen mit Gusseisen. Grobes CBN-Pulver in Kombination mit einem Metallbindemittel für maximale Zuverlässigkeit auch bei unterbrochenen Schnittbedingungen. 🇫🇷 Nuance tenace pour applications intensives sur fonte. Poudre CBN grossière combinée à un liant métallique pour une fiabilité maximale y compris dans des conditions de coupe interrompues.
NBH900U	High volume CBN 80%	3.500	-	-	H	H25 H35	<ul style="list-style-type: none"> 🇺🇸 Universal grade for severe applications both on ISO K and ISO H materials. High reliability on roughing operations. 🇮🇹 Grado universale per applicazioni gravose su materiali dei gruppi ISO K e ISO H. Elevata affidabilità nelle operazioni di sgrassatura. 🇩🇪 Universelle Qualität für schwere Anwendungen bei Materialien der Gruppen ISO K und ISO H. Hohe Zuverlässigkeit bei der Vorbearbeitung. 🇫🇷 Nuance universelle pour applications intensives sur les matériaux des groupes ISO K et ISO H. Haute fiabilité dans les opérations d'ébauche.
					K	K25 K35	
NBH950U	High volume CBN 90%	4.000	-	-	H	H30 H35	<ul style="list-style-type: none"> 🇺🇸 Extreme toughness mainly for cast iron machining but applicable, as alternative grade, even on hardened steel. 🇮🇹 Tenacità estrema, principalmente per lavorazione della ghisa, consigliato come grado alternativo anche per acciai temprati. 🇩🇪 Extreme Robustheit, hauptsächlich für Gusseisen, auch empfohlen als eine alternative Qualität für gehärtete Stähle. 🇫🇷 Ténacité extrême, principalement pour la fonte, recommandée comme nuance alternative y compris pour aciers trempés.
					K	K30 K35	

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ISO 513	nixko TOOLS	ISCAR	KENAMETAL	KYOCERA	MITSUBISHI	SANDVIK	SECO	SUMITOMO	TAEGUTEC	TUNGALOY	WALTER	
K	K01 - K10	<u>NBH450C</u>	IB05S IB10K IB10S	KB1345 KB5630	KBN475	BC5110 MB710	CB7525	CBN200 CK2065	BNC500	TB7015	BX930	
	K10 - K20	<u>NBH500C</u> <u>NBH600U</u>	IB90 IB90A	KB1340 KB1345 KBK45	<u>KBN60M</u>	MB4120 MB730	CB7525	CBN200 CBN300 CBN300P CBN400C	BN500 BN7000 BNC8115	TB7015 TB7020	BX480 WBK20	
	K20 - K30	<u>NBH600U</u> <u>NBH900U</u> <u>NBH950U</u>	<u>IB20KD</u> IB90A	KB1340 KBK45	<u>KBN900</u>	MBS140	CB7925	CBN500	BNS800 BNS8125	TB7020	<u>BXC90</u>	WBK30
H	H01 - H10	<u>NBL050C</u> <u>NBL150C</u>	IB05H IB10H IB10HC IB50	<u>KBH10B</u>	<u>KBN05M</u> <u>KBN10M</u> KBN510	BC8105 BC8110 MB8110	CB7015 CB7105 CB7115	CBN010 CBN150 CBN060K CH0550	BN1000 BNC100 BNC2010 BNC2115 BNX10	TB610	BX310 BXM10 WBH10 WBH10C	
	H10 - H20	<u>NBL200C</u> <u>NBL250C</u> <u>NBL300C</u>	IB20H IB20HC IB25HA IB55	<u>KBH20B</u>	<u>KBN25M</u> KBN525	BC8120 BC8220 MB8120	CB7025 CB7125	CBN060K CH2540	BN2000 BNC160 BNC200 BNC2020 BNC2125 BNC8115 BNX20	TB650	BX330 BX360 BXA20 BXM20 BXC50	WBH20
	H20 - H30	<u>NBL300C</u> <u>NBL350C</u> <u>NBH900U</u> <u>NBH950U</u>	<u>IB25HC</u> IB90	<u>KB5630</u>	<u>KBN35M</u>	BC8130 MB8130	CB7135 CB7925	CH3515	BNC300 BNC8115 BNX25	TB670	BX380	

BLACK: CVD, UNDERLINED: PVD, RED: uncoated

This table is our own estimation based on information available to the public and is not authorized by the company mentioned on it.

NEGATIVE type with hole			C	D	S	T	V	W
			80°	55°	90°	60°	35°	80°
K	UNIVERSAL	UE S01520 carbide backed						
		UE S01525 vertical brazing						
		UE S02020 full solid						
	SHARP	SE T01020 carbide backed						
H	UNIVERSAL	UE S01225 vertical brazing						
		UE S01225 solid brazing						
		UE S02020 full solid						

carbide backed: the PCBN material is produced with a carbide layer that improves mechanical properties and simplifies brazing process.
solid brazing: a thick PCBN tip extremely pure (not contaminated by carbide) guarantees much better performances. High reliable vacuum brazing is used.
vertical brazing: the PCBN layer is as thick as the carbide body for the best heat dissipation and brazing strenght. Vacuum brazing is necessary.
full solid: Full PCBN structure, maximizes performances and reduces the cost per edge. High cutting speed and depth of cut can be applied.

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		C	D	S	T	V	W		
NEGATIVE type with hole									
		80°	55°	90°	60°	35°	80°		
H	SHARP	SE S01015 vertical brazing	 A155 SIZE MCN 12	 A153 SIZE MDN 15	 A163 SIZE 16	 A170 SIZE 16	 A171 SIZE 08		
		SE S01015 solid brazing	 A154 SIZE 15						
	REINFORCED	RE S01535 vertical brazing	 A147 SIZE 12		 A164 SIZE 16		 A171 SIZE 08		
		RE S01535 solid brazing		 A154 SIZE 15					
		RE S01535 full solid	 A147 SIZE 09						
		WIPER	WE S01015 vertical brazing	 A148 SIZE 12					
			CHIPBREAKER	CF S01035 vertical brazing	 A148 SIZE 12				
		CM S01235 vertical brazing		 A148 SIZE 12					

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		NEGATIVE type without hole					
		C	R	S	T		
		80°	-	90°	60°		
K	UNIVERSAL	UE S02020 full solid	 SIZE 09 12	 SIZE 06 09 12	 SIZE 09 12	 SIZE 11 16	
		UE S02020 full solid with dimple	 SIZE 12		 SIZE 12		
	SHARP	SE T01020 full solid		 SIZE 09			
		REINFORCED	RE S02525 (size 09) - S10020 (size 12) full solid		 SIZE 09 12		
	RH S04025 full solid			 SIZE 09			
	H	UNIVERSAL	UE S02020 full solid	 SIZE 09 12	 SIZE 09 12	 SIZE 09 12	 SIZE 11 16
SHARP		SE T01020 full solid		 SIZE 09			
REINFORCED		RE S02525 (size 09) - S10020 (size 12) full solid		 SIZE 09 12			

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full solid: Full PCBN structure, maximizes performances and reduces the cost per edge. High cutting speed and depth of cut can be applied.

POSITIVE type with hole			C	D	R	T	V
			80°	55°	-	60°	35°
K	UNIVERSAL	UE S01520 carbide backed	CC A144 SIZE 06 09	DC A151 SIZE 11		TC A161 SIZE 09 11 16	VB A167 SIZE 16
		UE S02020 full solid			RC A157 SIZE 09 12		
	SHARP	SE T01020 carbide backed				TC A161 SIZE 11	
	REINFORCED	RE S01530 carbide backed				TC A162 SIZE 11 16	VB A168 SIZE 16
H	UNIVERSAL	UE S01225 solid brazing	CC A144 SIZE 06 09 12	DC A151 SIZE 07 11		TC, TP A161, A166	VB, VC A167, A169
		SE S01015 solid brazing	CC A144 SIZE 06 09	DC A151 SIZE 07 11		TC, TP A161, A166	VB, VC A167, A169
	SHARP	SF T01015 solid brazing	CC A144, A145 SIZE 06 09	DC A151 SIZE 07 11			VB A167 SIZE 11 16
	REINFORCED	RE S01535 solid brazing	CC A145 SIZE 06 09	DC A152 SIZE 07 11		TC, TP A162, A166	VB A168 SIZE 16

carbide backed: the PCBN material is produced with a carbide layer that improves mechanical properties and simplifies brazing process.
solid brazing: a thick PCBN tip extremely pure (not contaminated by carbide) guarantees much better performances. High reliable vacuum brazing is used.
vertical brazing: the PCBN layer is as thick as the carbide body for the best heat dissipation and brazing strenght. Vacuum brazing is necessary.
full solid: Full PCBN structure, maximizes performances and reduces the cost per edge. High cutting speed and depth of cut can be applied.

POSITIVE type with hole			C	D	R	T	V
			80°	55°	-	60°	35°
H	WIPER	<p>WE</p> <p>S01015</p>	<p>CC A145</p> <p>SIZE 06 09</p>				
			<p>solid brazing</p>				

carbide backed: the PCBN material is produced with a carbide layer that improves mechanical properties and simplifies brazing process.
solid brazing: a thick PCBN tip extremely pure (not contaminated by carbide) guarantees much better performances. High reliable vacuum brazing is used.
vertical brazing: the PCBN layer is as thick as the carbide body for the best heat dissipation and brazing strength. Vacuum brazing is necessary.
full solid: Full PCBN structure, maximizes performances and reduces the cost per edge. High cutting speed and depth of cut can be applied.

UE

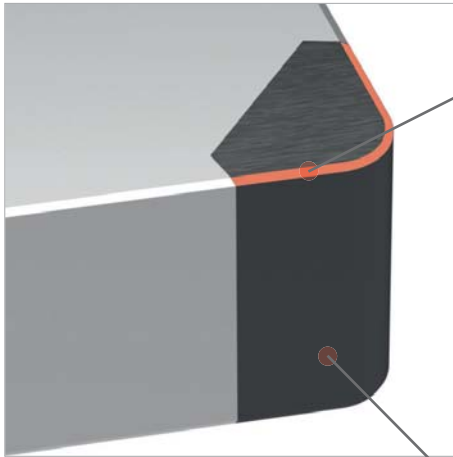
Edge preparation

- First choice for general machining application under variable cutting conditions from continuous to interrupted cut
 - Available in a broad range of grades both for cast iron and hardened steel machining
 - UE universal edge can be supplied in different PCBN formats, carbide backed, solid brazing, vertical brazing and full solid
 - Best compromise for sharp and strong cutting edge design
- Prima scelta per lavorazioni generali in condizioni di taglio variabili, da taglio continuo a interrotto.
 - Disponibile in un'ampia gamma di gradi per la lavorazione di ghisa e acciai temprati
 - Il tagliente universale (UE) può essere fornito in diverse tipologie PCBN: supporto in metallo duro, brasatura integrale, brasatura verticale e integrale
 - Miglior compromesso tra taglienza e robustezza del tagliente
- Erste Wahl für die allgemeine Bearbeitung unter verschiedenen Schnittbedingungen, vom kontinuierlichen bis zum unterbrochenen Schnitt.
 - Erhältlich in einer Vielzahl von Qualitäten für die Bearbeitung von Gusseisen und gehärteten Stählen
 - Die Universalschneidkante (UE) ist in verschiedenen PCBN-Typen erhältlich: Grundmaterial aus Hartmetall, integrales Löten, vertikales Löten und full solid
 - Optimaler Kompromiss zwischen Schärfe und Robustheit der Schneidkante
- Premier choix pour les applications générales d'usinage dans des conditions de coupe variables, de la coupe continue à la coupe interrompue.
 - Disponible dans une large gamme de nuances pour l'usinage de fonte et d'aciers trempés
 - L'arête de coupe universelle (UE) est disponible dans différents types de PCBN : support en carbure, brasage intégral, brasage vertical et entièrement solide
 - Meilleur compromis entre acuité et résistance de l'arête de coupe

UE

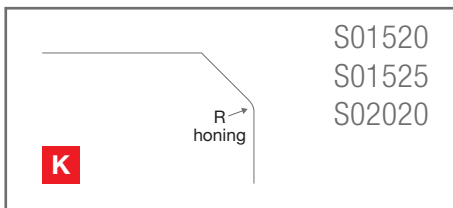
Edge preparation

Features of UE edge preparation



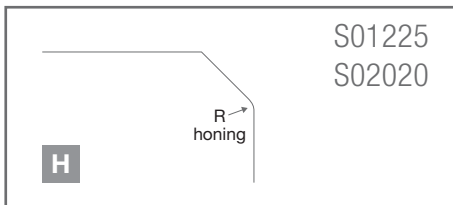
UNIVERSAL EDGE

- The edge preparation has been optimized according to insert style and workpiece material
 - Chamfer width from 0.12 mm to 0.20 mm with an angle of 20°- 25°
- La preparazione del tagliente è stata ottimizzata in base al campo di applicazione e al materiale da lavorare.
 - Larghezza smusso da 0.12 a 0.20 mm con angolo di 20°- 25°
- Die Schneidkantenpräparation ist auf den Einsatzbereich und das zu bearbeitende Material optimiert
 - Fasenbreite 0,12 bis 0,20 mm bei einem Winkel von 20° bis 25°
- La préparation des arêtes de coupe a été optimisée en fonction du domaine d'application et du matériau à usiner
 - Largeur de chanfrein de 0,12 à 0,20 mm avec angle de 20 ° - 25 °

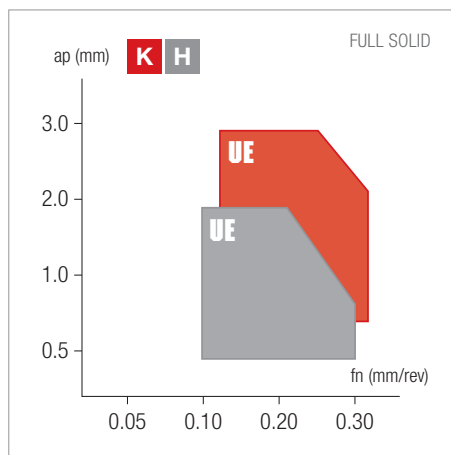
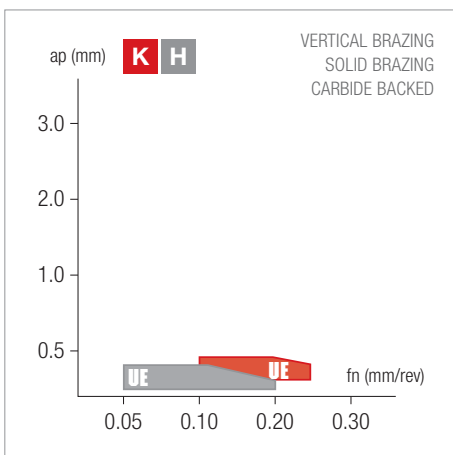


MULTIPLE SOLUTIONS

- All NIKKO PCBN format available: full solid, vertical brazing, solid tip, and carbide backed
- Tutti i formati Nikko Tools PCBN disponibili: integrale, brasatura verticale, riporto integrale, supporto in carburo
- Alle von Nikko Tools erhältlichen PCBN-Formate: Vollmassiv, vertikales Löten, Volllötlötung, Grundmaterial aus Hartmetall
- Tous les formats PCBN Nikko Tools disponibles : entièrement solide, brasage vertical, pointe solide et support en carbure



Application range - ISO 513



DIMPLED INSERTS AVAILABLE



- High performance alternative to conventional Si3N4 ceramic for cast iron roughing.
- Alternativa ad alte prestazioni rispetto alla convenzionale ceramica Si3N4 per sgrossatura della ghisa.
- Leistungsfähige Alternative zu herkömmlicher Si3N4-Keramik zum Schrumpfen von Gusseisen.
- Alternative hautes performances à la céramique Si3N4 traditionnelle pour l'ébauche de la fonte.

SE

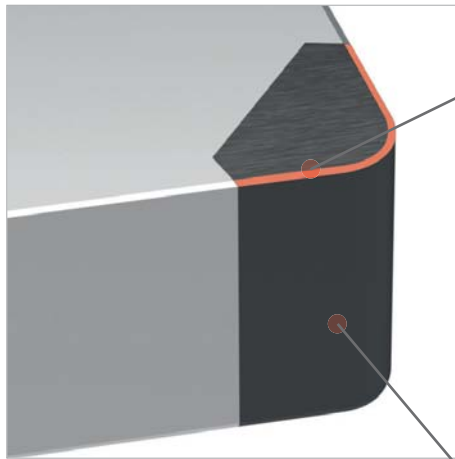
Edge preparation

- Recommended for continuous cut application under stable conditions
 - Cutting forces reduced by 10% in comparison with most common general purpose design
 - Sharpe edge preparation with high wear-resistant CBN grade drastically reduces burrs formation
- Empfohlen für kontinuierliche Schneidanwendungen unter stabilen Schnittbedingungen
 - 10 % geringere Schnittkräfte im Vergleich zu herkömmlichen Standardausführungen für allgemeine Anwendungen
 - Scharfe Kantenpräparation mit hochverschleißfester CBN-Qualität, wodurch die Gratbildung deutlich reduziert wird
- Raccomandato per applicazioni con taglio continuo in condizioni di taglio stabili
 - Forze di taglio ridotte del 10% rispetto ai più comuni design per applicazioni generiche
 - La geometria molto affilata unita al grado CBN con elevata resistenza all'usura riducono la formazione di bave.
- Recommandé pour applications de coupe continues dans des conditions de coupe stables
 - Efforts de coupe réduits de 10 % par rapport aux conceptions pour applications générales les plus courantes
 - Préparation de l'arête de coupe avec nuance CBN très résistante à l'usure qui réduit considérablement la formation de bavures

SE

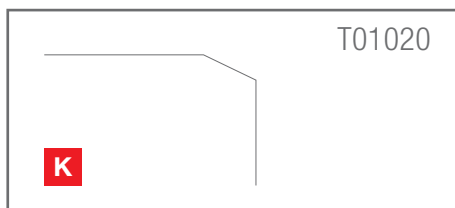
Edge preparation

Features of SE edge preparation



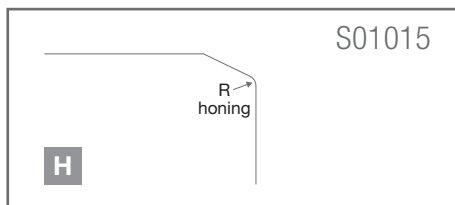
SHARP EDGE

- The edge preparation has been optimized according to insert style and workpiece material
- The chamfer width is 0.10 mm with angle from 15° to 20°
- La preparazione del tagliente ottimizzata in accordo allo stile dell'inserto e al materiale
- Larghezza smusso 0.10 mm con angolo da 15° a 20°
- Optimierte Schneidkantenpräparation je nach Ausführung und Material der Wendeschneidplatte
- Fasenbreite 0,10 mm mit einem Winkel von 15° bis 20°
- Préparation d'arête optimisée en fonction du type de plaquette et de la matière
- Largeur de chanfrein 0,10 mm avec angle de 15° à 20°

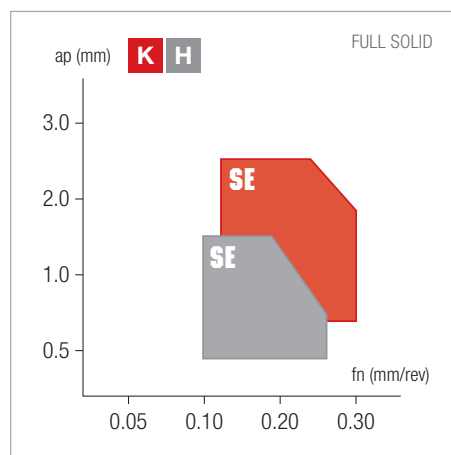
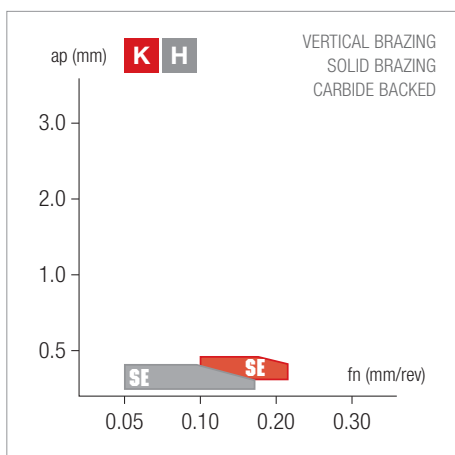


MULTIPLE SOLUTIONS

- All NIKKO PCBN format available: full solid, vertical brazing, solid tip, and carbide backed
- Tutti i formati Nikko Tools PCBN disponibili: integrale, brasatura verticale, brasatura integrale, supporto in metallo duro
- Alle von Nikko Tools erhältlichen PCBN-Formate: Vollmassiv, vertikales Löten, Volllötlung, Grundmaterial aus Hartmetall
- Tous les formats PCBN Nikko Tools disponibles : entièrement solide, brasage vertical, pointe solide et support en carbure



Application range - ISO 513



T TYPE AVAILABLE FOR ISO K

- T land without honing prevent burrs formation on cast iron machining.
- Pianetto a T senza onatura che previene la formazione di bave nella lavorazione della ghisa.
- T-Fläche ohne Honen, was die Gratbildung bei der Bearbeitung von Gusseisen verhindert.
- Plaquette en T sans honing qui évite la formation de bavures lors de l'usinage de la fonte.

SF

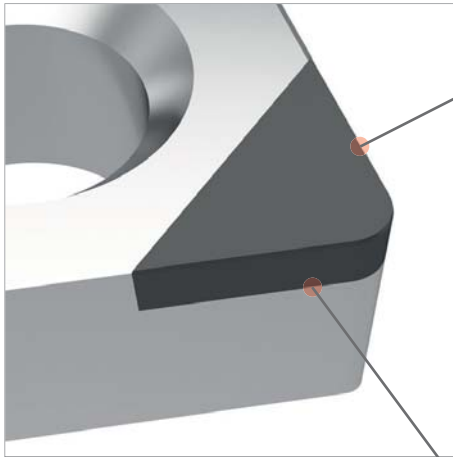
Edge preparation

- Recommended for small parts high precision machining under continuous cutting conditions
 - Low cutting force allows machining of thin workpieces avoiding vibrations, obtaining strict dimensional tolerances
 - SF for super fine finishing is combined with a special version of NBL050C named NBL050CX with a coating specifically studied to enhance the sharp action of this geometry
- Raccomandato per lavorazioni di minuteria di alta precisione in condizioni di taglio continuo
 - Le basse forze di taglio consentono la lavorazione di pezzi sottili, evitando vibrazioni e ottenendo rigorose tolleranze dimensionali.
 - La geometria SF per superfinitura di precisione è combinata con una versione speciale di NBL050C chiamata NBL050CX con un rivestimento specificamente studiato per esaltarne la taglienza
- Empfohlen für die Präzisionsbearbeitung von sehr kleinen Komponenten unter kontinuierlichen Schnittbedingungen
 - Die geringen Schnittkräfte ermöglichen die Bearbeitung dünner Teile, vermeiden Vibrationen und erreichen genaue Maßtoleranzen.
 - Die SF-Geometrie für die präzise Feinstbearbeitung wird mit einer speziellen Ausführung des NBL050C, dem NBL050CX, kombiniert, der über eine spezielle Beschichtung verfügt, die die Schneidwirkung verbessert
- Recommandé pour les usinages haute précision de très petites pièces dans des conditions de coupe continues
 - Les faibles efforts de coupe permettent l'usinage de pièces fines, évitant les vibrations et atteignant des tolérances dimensionnelles serrées.
 - La géométrie SF pour superfinition de précision est associée à une version spéciale du NBL050C dénommée NBL050CX dotée d'un revêtement pour renforcer l'action de coupe de la géométrie

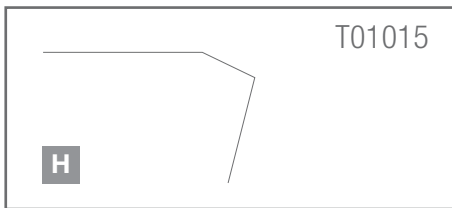
SF

Edge preparation

Features of SF edge preparation

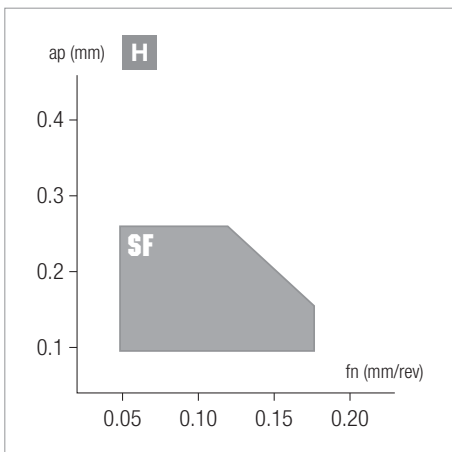
**SUPER FINE**

- The edge preparation has been optimized for small part machining and best dimensional tolerances
 - The chamfer width is 0.10 mm with an angle of 15°, without honing
- La preparazione del tagliente è ottimizzata per la lavorazione di particolari di piccole dimensioni e l'ottenimento delle migliori tolleranze dimensionali
 - Larghezza smusso 0.10 mm con angolo di 15°, senza onatura
- Optimierte Schneidkantenpräparation für die Bearbeitung kleiner Details und zum Erreichen der besten Maßtoleranzen
 - Fasenbreite 0,10 mm bei 15° Winkel, ohne Honen
- Préparation d'arête optimisée pour l'usinage de détails aux dimensions réduites et l'obtention de meilleures tolérances dimensionnelles
 - Largeur de chanfrein 0,10 mm avec angle de 15°, sans rodage

**SOLID BRAZING**

- Direct brazing between PCBN and carbide, with special vacuum technology, produces a pure and stable cutting material
- La saldobrasatura con speciale tecnologia vacuum brazing tra PCBN e metallo duro, consente di ottenere un tagliente puro e stabile
- Das Schweißlöten von PCBN und Hartmetall mit spezieller Vakuumtechnik sorgt für ein sauberes und zuverlässiges Schneidmaterial
- Le brasage direct entre PCBN et carbure, avec une technologie spéciale sous vide, produit un matériau de coupe pur et fiable

Application range - ISO 513

**SHARP AND PRECISE**

- Only for positive inserts.
Perfect solution for very small radii.
0.1 radius can be produced as semi-standard product.
- Solo per inserti positivi.
La soluzione perfetta per raggi molto piccoli.
Il raggio 0.1 può essere prodotto come semi-standard.
- Nur für positive Wendschneidplatten.
Die perfekte Lösung für sehr kleine Radien.
Der Radius 0,1 kann als Semi-Standard hergestellt werden.
- Uniquement pour plaquettes positives.
Parfaite solution pour les très petits rayons.
Le rayon 0,1 peut être produit en semi-standard.

RE

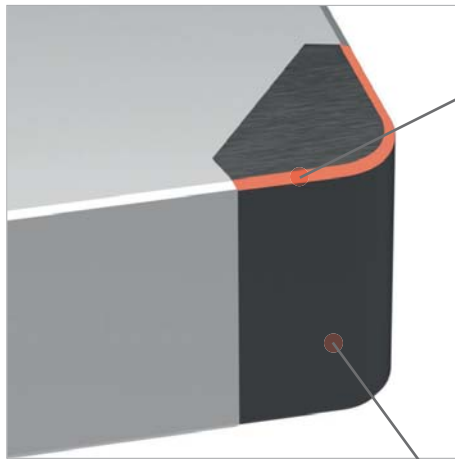
Edge preparation

- Specifically designed to grant high reliability on heavy-interrupted cut
 - In case of hardened steel machining a larger chamfer angle improves the cutting edge strength
 - RE reinforced edge is always combined with high toughness grades
 - RE geometry on solid type CBN round inserts is a great solution for roll machining in steel industry
- Progettato specificamente per assicurare elevata affidabilità in condizioni di taglio fortemente interrotto.
 - Nel caso di acciai temprati, un ampio angolo di spoglia migliora la robustezza del tagliente
 - La geometria RE con tagliente rinforzato è sempre combinata a gradi di elevata tenacità
 - La geometria RE su inserti tondi integrali CBN è la soluzione ottimale per la lavorazione dei rulli nell'industria siderurgica
- Speziell für hohe Zuverlässigkeit unter stark unterbrochenen Schnittbedingungen entwickelt.
 - Bei gehärtetem Stahl verbessert ein breiter Spanwinkel die Robustheit der Schneidkante
 - Die RE-Geometrie mit verstärkter Schneidkante wird stets mit Qualitäten hoher Robustheit kombiniert
 - Die RE-Geometrie als Voll-CBN-Wendeschneidplatten ist eine hervorragende Lösung für die Walzenbearbeitung in der Stahlindustrie
- Spécialement conçu pour garantir une fiabilité élevée dans des conditions de coupe fortement interrompues.
 - Dans le cas des aciers trempés, un angle de dépouille important améliore la résistance de l'arête de coupe
 - La géométrie RE à arête de coupe renforcée est toujours associée à des nuances de haute ténacité
 - La géométrie RE sur plaquettes rondes intégrales CBN est une excellente solution pour l'usinage des rouleaux dans l'industrie sidérurgique

RE

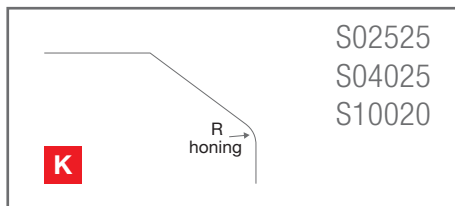
Edge preparation

Features of RE edge preparation



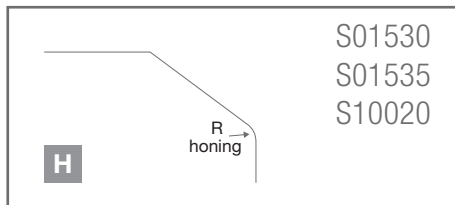
REINFORCED EDGE

- Big chamfer and angle to keep the cutting edge strong
 - The chamfer width starts from 0.15 mm for brazed type and reaches 1 mm for solid
- Grande smusso e ampio angolo di spoglia per mantenere il tagliente robusto
 - Larghezza smusso: parte da 0.15 mm per tipologia saldobrasata e arriva a 1 mm nella versione integrale
- Große Fase und breiter Spanwinkel für eine robuste Schneidkante
 - Fasenbreite: ab 0,15 mm für die schweißgelötete Ausführung und bis zu 1 mm in der Voll CBN Ausführung
- Grand chanfrein et grand angle de dépouille pour maintenir une arête de coupe robuste
 - Largeur de chanfrein : commence à 0,15 mm pour le type brasé, jusqu'à 1 mm dans la version intégrale

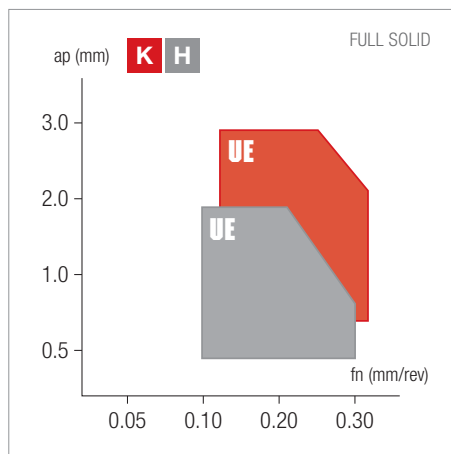
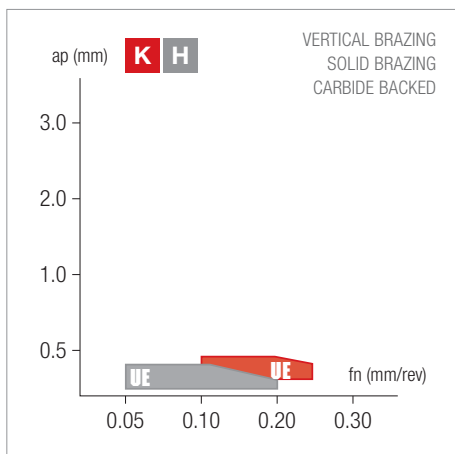


MULTIPLE SOLUTIONS

- All NIKKO PCBN format available: full solid, vertical brazing, solid brazing, and carbide backed
- Tutti i formati Nikko Tools PCBN disponibili: interamente solido, brasatura verticale, intera brasatura, supporto in metallo duro
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- Tous les formats PCBN Nikko Tools disponibles : entièrement solide, brasage vertical, pointe solide et support en carbure



Application range - ISO 513



! Cutting forces could be slightly higher compared to general purpose type, stable clamping and equipments are strongly recommended.

Le forze di taglio possono risultare leggermente più elevate rispetto alle tipologie per uso generale: si raccomanda l'uso di attrezzature e un fissaggio stabile.

Die Schnittkräfte können etwas höher sein als bei Allzwecktypen: Es wird empfohlen, Werkzeuge und eine sichere Befestigung zu verwenden.

Les efforts de coupe peuvent être légèrement supérieurs par rapport aux types d'applications générales : un serrage stable et des équipements sont recommandés.

WE

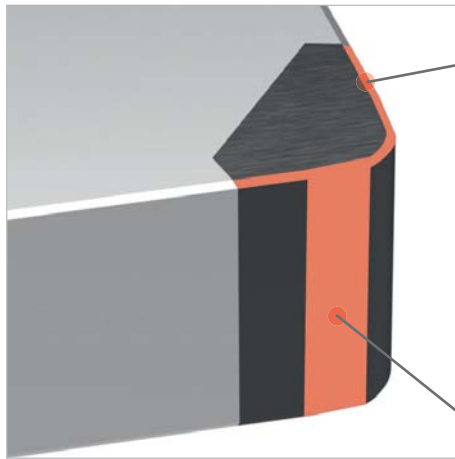
Edge preparation

- Wiper geometry with special arc design for maximum performance and low cutting forces
 - Improves productivity when used at high feed machining; reaches ground surface quality at conventional cutting conditions
 - WE wiper edge is available in a broad range of grades for hardened steel
- Wendeschneidplattengeometrie mit speziellem Bogendesign für maximale Leistung und geringe Schnittkräfte
 - Verbessert die Produktivität bei der Verwendung mit großen Vorschüben; verbessert die Qualität der geschliffenen Oberfläche unter konventionellen Schnittbedingungen
 - Die Wendeschneidplattengeometrie WE (Wiper Edge) ist in einer Vielzahl von Qualitäten für gehärtete Stähle erhältlich
- Geometria raschiante con speciale disegno ad arco per le massime prestazioni e basse forze di taglio
 - Migliora la produttività quando usato con elevati avanzamenti; raggiunge la qualità delle superfici rettificate in condizioni di taglio convenzionali
 - Geometria raschiante WE (wiper edge) disponibile in un'ampia gamma di gradi per acciai temprati
- Géométrie WIPER avec conception en arc spéciale pour des performances maximales et de faibles efforts de coupe
 - Améliore la productivité si utilisé à des avances élevées ; atteint la qualité des surfaces rectifiées dans des conditions de coupe conventionnelles
 - Géométrie wiper WE disponible dans une large gamme de nuances pour aciers trempés

WE

Edge preparation

Features of WE edge preparation

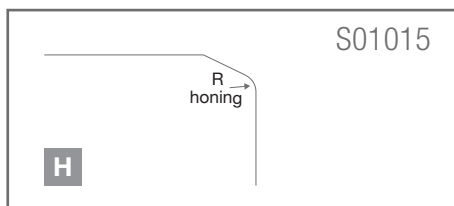


WIPER EDGE

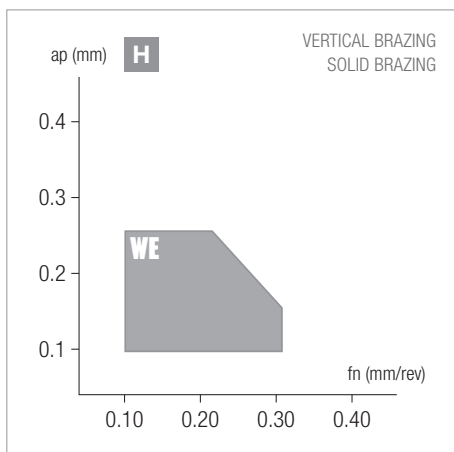
- Small chamfer and reduced angle for a very smooth cutting action
• The chamfer width is 0.1 mm with an inclination of 15°
- Piccolo smusso e ridotto angolo per azione di taglio estremamente leggera
• Larghezza smusso di 0.1 mm con inclinazione di 15°
- Kleine Fase und kleiner Winkel für extrem behutsames Schneiden
• Fasenbreite von 0,1 mm bei 15° Neigung
- Petit chanfrein et angle réduit pour une coupe extrêmement douce
• Largeur de chanfrein de 0,1 mm avec inclinaison de 15 °

ARC GEOMETRY

- Multiple arc wiper instead of conventional straight wiper land effectively reduces vibrations, creates better surface and suitable for wider feed range
- Il pianetto raschiante multicurva, rispetto ai pianetti raschianti convenzionali dritti, riduce efficacemente le vibrazioni per ottenere migliori superfici e si adatta a un ampio intervallo di avanzamenti
- Die mehrkurvige Wendschneidplatte reduziert im Vergleich zu herkömmlichen geraden Schneidplatten effektiv die Vibration für bessere Oberflächen und passt sich an eine Vielzahl von Vorschüben an
- La plaquette WIPER ARC multiple, par rapport aux plaquettes wiper droites classiques, réduit efficacement les vibrations pour obtenir de meilleures surfaces et s'adapte à une plage d'avances plus large



Application range - ISO 513



SPECIAL DESIGN UPON REQUEST



- Wiper "concept" can be applied to any shape and it can be provided even in combination of full solid grades.
- Il concetto di raschiante può essere usato per qualsiasi geometria anche se le più comuni sono quelle con angolo di 80° che possono essere fornite anche in combinazione a gradi integrali.
- Das Wendschneidplattenkonzept kann für jede beliebige Geometrie verwendet werden, auch wenn die gängigsten Geometrien die mit einem Winkel von 80° sind, die auch in einer Kombination mit integralen Qualitäten geliefert werden können.
- Le concept de wiper peut être appliqué à n'importe quelle forme, bien que les plus courantes soient celles avec un angle de 80 ° qui peuvent également être fournies en combinaison avec des qualités intégrales.

CF/CM

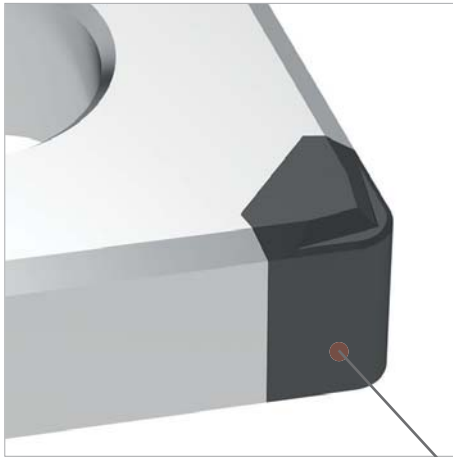
Edge preparation

- Solution for surface hardened or sintered steel workpieces like gears and shafts;
 - The edge preparation is suitable for interrupted cut on hardened surfaces and sintered steel at high hardness;
 - The stepped chipbreaker effectively controls the chips especially when cutting the softer part under the hardened layer
 - Tailor-made solutions can be realized both for negative and positive inserts
- Rompitrucciolo 3D per il miglior controllo truciolo anche nelle applicazioni più complesse.
 - CM è specializzato nella rimozione dello strato cementato, mentre CF è principalmente per acciai temprati in cui l'evacuazione del truciolo è impegnativa (tipica applicazione: tornitura interna)
 - Si possono realizzare soluzioni su misura per inserti negativi e positivi
- 3D-Spanbrecher für optimierte Fluss- und Spankontrolle bei schwierigen Anwendungen.
 - CM ist auf das Abtragen der gehärteten Schicht spezialisiert, wohingegen CF vor allem für gehärtete Stähle geeignet ist, bei denen die Spanabfuhr schwierig ist (typische Anwendung: Innendrehen)
 - Es können kundenspezifische Lösungen für negative und positive Wendeschneidplatten realisiert werden
- Brise-copeaux 3D pour évacuation copeau optimisée et contrôle des copeaux dans les applications les plus exigeantes.
 - CM est spécialisé dans l'enlèvement de la couche de cémentation, tandis que CF est principalement destiné aux aciers trempés où l'évacuation des copeaux est exigeante (application typique : tournage interne)
 - La création de solutions sur mesure est possible pour les plaquettes négatives et positives

CF/CM

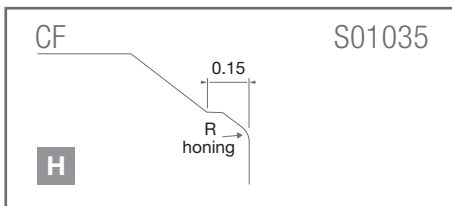
Edge preparation

Features of CF/CM edge preparation



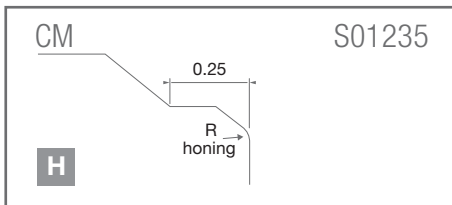
SMART DESIGN

- Excellent performance thanks to the chipbreaker and cutting edge design.
 - Small chamfer to reduce cutting forces and 35° angle for a higher strength
- Prestazioni eccellenti grazie all'allo speciale design di rompitruciolo e tagliente
 - Piccolo smusso per ridurre le forze di taglio e 35° per maggiore robustezza
- Hervorragende Leistung durch die Trennung von Spanbrecher und Schneidkante
 - Kleine Fase zur Reduzierung der Schnittkräfte und 35° für mehr Robustheit
- Excellentes performances grâce à la séparation entre le brise-copeaux et l'arête de coupe
 - Petit chanfrein pour réduire les efforts de coupe et un angle à 35° pour une solidité accrue

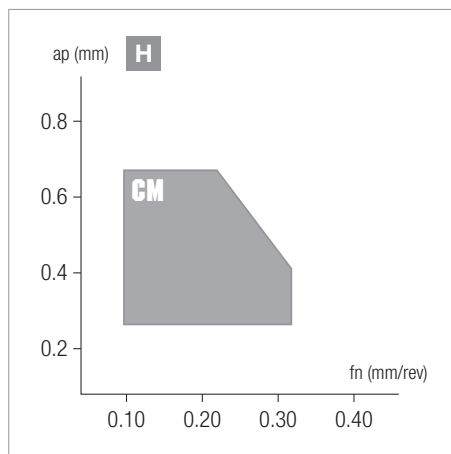
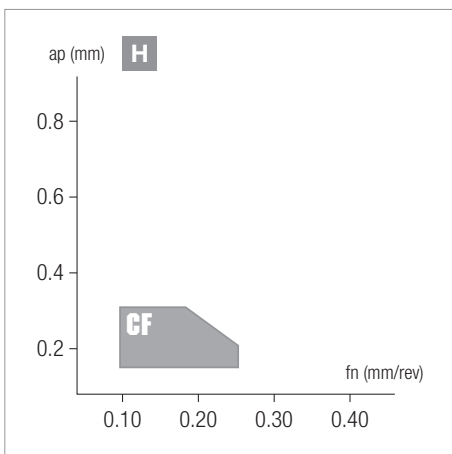


GREAT RELIABILITY

- Available with stable and reliable vertical brazing technology
- Disponibile con tecnologia di brasatura verticale stabile e affidabile
- Erhältlich mit stabiler und zuverlässiger vertikaler Löttechnologie
- Disponible avec une technologie de brasage verticale stable et fiable



Application range - ISO 513



CHIPBREAKER+WIPER AVAILABLE



- The combined types CFW and CMW are also available. Perfect chip control and great surface finishing in one step.
- Disponibili anche le tipologie combinate CFW e CMW. Perfetto controllo del truciolo e ottima finitura superficiale in un unico passaggio.
- Auch kombinierte CFW- und CMW-Typen sind erhältlich. Perfekte Spankontrolle und hervorragende Oberflächenqualität in einem einzigen Arbeitsgang.
- Les types combinés CFW et CMW sont également disponibles. Contrôle parfait des copeaux et excellente finition de surface en une seule passe.

INDEXABLE

A - TURNING

B - THREADING

C - GROOVING

D - MILLING

E - DRILLING

F - ACCESSORIES

G - SPARE PARTS

K	BRAZED TIP		FULL SOLID			
	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE		
●	wear resistance	-	-	-	-	
	1 st CHOICE	NBH450C / UE	NBH450C / UE	NBH500C / UE	-	
	toughness	NBH500C / UE	-	NBH600U / UE	-	
●	wear resistance	NBH450C / UE	-	-	-	
	1 st CHOICE	NBH500C / UE	NBH450C / UE	NBH500C / UE	-	
	toughness	NBH900U / UE	NBH450U / RE	NBH600U / UE	-	
⊕	wear resistance	NBH500C / UE	-	NBH500C / UE	-	
	1 st CHOICE	NBH900U / RE	-	NBH600U / UE	-	
	toughness	-	-	NBH900U / UE	-	

H	BRAZED TIP		BRAZED TIP (WIPER)		FULL SOLID	
	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE
●	wear resistance	NBL050C / SE	NBL050C / SE	-	-	-
	1 st CHOICE	NBL150C / UE	NBL150C / SE	NBL050C / WE	NBL050C / WE	NBL200C / UE
	toughness	NBL250C / UE	NBL250C / UE	NBL150C / WE	NBL150C / WE	NBL250C / UE
●	wear resistance	NBL150C / UE	NBL150C / UE	NBL050C / WE	NBL050C / WE	NBL200C / UE
	1 st CHOICE	NBL250C / UE	NBL250C / UE	NBL150C / WE	NBL150C / WE	NBL250C / UE
	toughness	NBL300C / UE	NBL300C / UE	NBL250C / WE	-	NBH900U / UE
⊕	wear resistance	NBL300C / UE	NBL300C / UE	-	-	-
	1 st CHOICE	NBL350C / RE	NBL350C / RE	-	-	NBH900U / RE
	toughness	NBH900U / RE	-	-	-	NBH950U / RE

C	N	M	G	12	04	08	S	-	4	V	-	UE	NBL250	C	
1	2	3	4	5	6	7	8		9	10		11	12	13	14

1	SHAPE
C	80° rhombic
D	55° rhombic
K	55° parallelogram
S	90° square
T	60° triangular
V	35° rhombic
W	80° trigon

2	RELIEF ANGLE
B	5°
C	7°
D	15°
E	20°
N	0°
P	11°

3 TOLERANCES			
Symbol	I.C.	Thickness	Corner height
E	±0.025	±0.025	±0.025
G	±0.025	±0.13	±0.025
M	±0.05 ~ ±0.15	±0.13	±0.08 ~ ±0.18
U	±0.08 ~ ±0.25	±0.13	±0.13 ~ ±0.38

4 HOLE/CHIPBREAKER			
Symbol	Hole	Hole countersink	Chipbreaker
A		✓	✗
G		✓	✗
M		✓	✗
N		✗	✗
T		✓	40° ÷ 60°
W		✓	40° ÷ 60°
X	NIKKO norm		

5 EDGE LENGHT							
I.C. (mm)	C shape	D shape	R shape	S shape	T shape	V shape	W shape
3.97	03	04		03	06		
4.76	04	05		04	08	08	
5.00			05				
5.56	05	06		05	09		03
6.00			06				
6.35	06	07		06	11	11	04
7.94	08	09		07	13		05
8.00			08				
9.53	09	11	09	09	16	16	06
10.00		12	10				
12.00							
12.70	12	15	12	12	22	22	08
15.88	16	19	15	15	27	24	10
16.00			16				
19.05	19	23	19	19	33	33	13
20.00			20				
22.23	22	27		22	38		
25.00			25				
25.40	25	31	25	25	44	44	17
31.75	32	38	31	31	54	54	21
32.00			32				

6 THICKNESS	
Symbol	(mm)
01	1.59
T1	1.98
02	2.38
T2	2.78
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35
07	7.94
09	9.53

7 RADIUS	
Symbol	(mm)
005	0.05
01	0.10
02	0.20
04	0.40
08	0.80
12	1.20
16	1.60
20	2.00
24	2.40

8 EDGE PREPARATION	
Symbol	Shape
E	honing
F	sharp edge
S	honing + chamfering
T	chamfering

<table border="1"> <thead> <tr><th>9</th><th>NUMBER OF EDGES</th></tr> </thead> <tbody> <tr><td>...</td><td>number of cutting edges (only for brazed type)</td></tr> </tbody> </table>	9	NUMBER OF EDGES	...	number of cutting edges (only for brazed type)	<table border="1"> <thead> <tr><th>10</th><th>BRAZING TYPE</th></tr> </thead> <tbody> <tr><td>C</td><td>carbide backed</td></tr> <tr><td>S</td><td>solid brazing</td></tr> <tr><td>V</td><td>vertical brazing</td></tr> </tbody> </table>	10	BRAZING TYPE	C	carbide backed	S	solid brazing	V	vertical brazing	<table border="1"> <thead> <tr><th>11</th><th>EDGE PREPARATION</th></tr> </thead> <tbody> <tr><td>SE</td><td>sharp edge</td></tr> <tr><td>UE</td><td>universal edge</td></tr> <tr><td>RE</td><td>reinforced edge</td></tr> <tr><td>WE</td><td>wiper edge</td></tr> <tr><td>CBx</td><td>chipbreaker (CBF finishing, CBM medium)</td></tr> </tbody> </table>	11	EDGE PREPARATION	SE	sharp edge	UE	universal edge	RE	reinforced edge	WE	wiper edge	CBx	chipbreaker (CBF finishing, CBM medium)		
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<table border="1"> <thead> <tr><th>12</th><th>GRADE - features</th></tr> </thead> <tbody> <tr><td>NBL</td><td>low content CBN</td></tr> <tr><td>NBH</td><td>high content CBN</td></tr> </tbody> </table>	12	GRADE - features	NBL	low content CBN	NBH	high content CBN	<table border="1"> <thead> <tr><th>13</th><th>GRADE - material</th></tr> </thead> <tbody> <tr><td>000÷390</td><td>ISO H</td></tr> <tr><td>400÷690</td><td>ISO K</td></tr> <tr><td>700÷790</td><td>ISO S</td></tr> <tr><td>800÷890</td><td>sintered materials</td></tr> <tr><td>900÷990</td><td>universal</td></tr> </tbody> </table>	13	GRADE - material	000÷390	ISO H	400÷690	ISO K	700÷790	ISO S	800÷890	sintered materials	900÷990	universal	<table border="1"> <thead> <tr><th>14</th><th>GRADE - coating</th></tr> </thead> <tbody> <tr><td>C</td><td>coated</td></tr> <tr><td>U</td><td>uncoated</td></tr> <tr><td>X</td><td>special</td></tr> </tbody> </table>	14	GRADE - coating	C	coated	U	uncoated	X	special
12	GRADE - features																											
NBL	low content CBN																											
NBH	high content CBN																											
13	GRADE - material																											
000÷390	ISO H																											
400÷690	ISO K																											
700÷790	ISO S																											
800÷890	sintered materials																											
900÷990	universal																											
14	GRADE - coating																											
C	coated																											
U	uncoated																											
X	special																											

CC

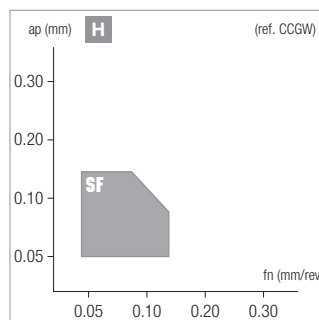
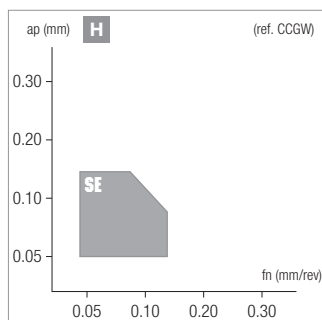
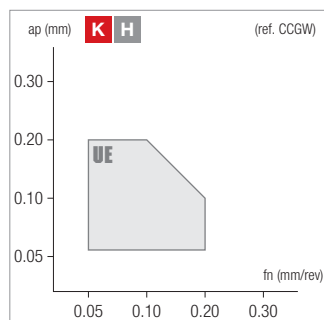
ISO - with hole

- The most popular insert shape due to high versatility
- Clearance angle 7°, effectively reduces the risk of chip jamming when boring
- 80° corner can be used for both turning and facing operations
- Solid brazing type provides better stability and reliability than conventional carbide backed brazing type

BL: Low CBN volume BH: High CBN volume PVD: Physical vapor deposition		BH	BL	BL	BL	BL	BL	BL													
		PVD	PVD	PVD	PVD	PVD	PVD	PVD													
		NBH450C	NBL050C	NBL050CX	NBL150C	NBL250C	NBL300C	NBL350C													
Stable machining, light cut	● 1 st choice ○ suitable	●	●	●	●	○	○														
General machining, medium cut	● 1 st choice ○ suitable	●			○	●	●	○													
Unstable machining, heavy cut	▲ 1 st choice ☆ suitable	▲					▲	▲													
Dimensions		ISO																			
		Vc(m/min) - suggested cutting speed range (bold: 1 st choice)																			
		P																			
		M																			
		K	340																		
		1000																			
N																					
S																					
H		120	120	90	90	60	60														
		280	280	220	180	180	150														

Designation		RE	IC	S	D1	LE	Stock																		
UNIVERSAL solid tip	CCGW060202S-UE-2S	0.20	6.35	2.38	2.8	2.8		○		○															
	CCGW060204S-UE-2S	0.40	6.35	2.38	2.8	2.8		◎		●	●	●	○												
	CCGW060208S-UE-2S	0.80	6.35	2.38	2.8	2.7				○	○	○													
	CCGW09T302S-UE-2S	0.20	9.525	3.97	4.4	2.8			○		○														
	CCGW09T304S-UE-2S	0.40	9.525	3.97	4.4	2.8			●		●	●	●	○											
	CCGW09T308S-UE-2S	0.80	9.525	3.97	4.4	2.7					●	●	●	○											
	CCGW120404S-UE-2S	0.40	12.7	4.76	5.5	2.8						○													
	CCGW120408S-UE-2S	0.80	12.7	4.76	5.5	2.7						○													
UNIVERSAL carbide backed	CCGW060204S-UE-2C	0.40	6.35	2.38	2.8	2.8		●																	
	CCGW060208S-UE-2C	0.80	6.35	2.38	2.8	2.7		○																	
	CCGW09T304S-UE-2C	0.40	9.525	3.97	4.4	2.8			●																
	CCGW09T308S-UE-2C	0.80	9.525	3.97	4.4	2.7			●																
	CCGW120408S-UE-2C	0.80	12.7	4.76	5.5	2.7			○																
SHARP solid tip	CCGW060202S-SE-2S	0.20	6.35	2.38	2.8	2.8		○		●															
	CCGW060204S-SE-2S	0.40	6.35	2.38	2.8	2.8			●		●														
	CCGW060208S-SE-2S	0.80	6.35	2.38	2.8	2.7					○														
	CCGW09T302S-SE-2S	0.20	9.525	3.97	4.4	2.8			○		●														
	CCGW09T304S-SE-2S	0.40	9.525	3.97	4.4	2.8			●		●														
	CCGW09T308S-SE-2S	0.80	9.525	3.97	4.4	2.7					○														
SHARP solid tip without hone	CCGW060202T-SF-2S	0.20	6.35	2.38	2.8	2.8				○															
	CCGW060204T-SF-2S	0.40	6.35	2.38	2.8	2.8				●															
	CCGW09T304T-SF-2S	0.40	9.525	3.97	4.4	2.8					◎														
	CCGW09T308T-SF-2S	0.80	9.525	3.97	4.4	2.7					○														

★ 1st choice, ☆ suitable, ● stock standard, ◎ non-stock standard (no MOQ), ○ non-stock standard (MOQ), ▲ upcoming product, ▽ stock exhaustion



PRODUCT SELECTION p. A142

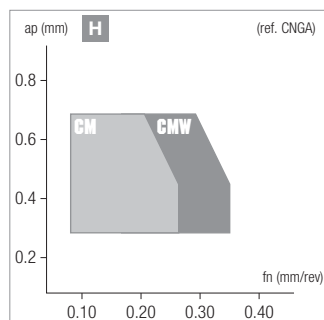
CUTTING CONDITIONS p. A177

GRADES FEATURES p. A120

HOLDERS p. A255

CN	BL: Low CBN volume BH: High CBN volume PVD: Physical vapor deposition																							
	BH	BH	BH	BH	BH	BL	BL	BL	BL	BL	BL	BL	PVD	PVD	PVD	PVD	PVD	PVD	PVD	PVD	PVD	PVD		
ISO - with hole	NBH450C												NBH450U											
<ul style="list-style-type: none"> The most popular insert shape due to high versatility 80° corner can be used for both turning and facing operations Strong cutting edge with secure seating in the insert pocket creates good surface finishing Vertical brazing type and solid type CBN show better performance in interrupted machining The use of chip breaker on CBN brazed tips effectively improves chip flow control 	Stable machining, light cut		● 1 st choice ○ suitable		●		●		○		○		●		●		○		○					
	General machining, medium cut		● 1 st choice ○ suitable		●		●		○		○		●		●		○		○					
	Unstable machining, heavy cut		★ 1 st choice ☆ suitable		★		★		★		★		★		★		★		★					
Dimensions												ISO												
												Vc(m/min) - suggested cutting speed range (bold: 1st choice)												
												P												
												M												
												K												
												N												
												S												
												H												
												40 120 90 90 90 60 60												
												160 280 220 200 180 180 150												
Designation												Stock												
CHIPBREAKER	CMW H		CNGA120408S-CMW-4V		0.80	12.7	4.76	5.16	2.5	●														
			CNGA120412S-CMW-4V		1.20	12.7	4.76	5.16	2.5	●														
vertical brazing medium with WIPER																								

★ 1st choice, ☆ suitable, ● stock standard, ○ non-stock standard (no MOQ), ○ non-stock standard (MOQ), ▲ upcoming product, ▽ stock exhaustion



ISO 513	MATERIAL	HARDNESS HB	NBH450C			NBH450U			NBH500C		
			min	start	max	min	start	max	min	start	max
K1	Grey cast iron (ex. 0.6025/GG25/EN-GJL-250)	150 ÷ 250	● 400	700	1000	● 400	700	1000	○ 500	1000	1500
			● 380	650	920	● 380	650	920	● 400	900	1400
			⊕ 340	600	860	⊕ 340	600	860	⊕ 300	800	1300
ISO 513	MATERIAL	HARDNESS HRC	NBLO50C / CX			NBL150C			NBL200C		
			min	start	max	min	start	max	min	start	max
H1	Case-hardened steel (ex. 1.7131/16MnCr5)	50 ÷ 56	● 120	200	280	● 100	160	220	○ 100	150	200
						☺ 90	150	210	● 90	135	180
H2	Bearing steel, quenched and tempered steel (ex. 1.3505/100Cr6)	54 ÷ 62	● 100	170	240	● 100	150	200	○ 100	140	180
						☺ 90	140	190	● 90	130	170
H3	Hardened tool steel (ex. 1.2436/X210CrW12)	60 ÷ 65	● 100	140	180	● 80	130	180	○ 80	120	160
						☺ 70	120	170	● 70	110	150
H4	White cast iron (ex. 0.9625/G-X260NiCr42)	54 ÷ 62									

Complete workpiece materials p. M1.

NBH500U			NBH600U			NBH900U			NBH950U								
min	start	max	min	start	max	min	start	max	min	start	max						
○ 500	1000	1500				○ 500	800	1100									
● 400	900	1400	○ 400	800	1200	● 400	700	1000	○ 400	600	800						
⊕ 300	800	1300	⊕ 300	600	900	⊕ 300	600	900	⊕ 300	500	700						
NBL250C			NBL300C			NBL350C			NBH500C			NBH900U			NBH950U		
min	start	max	min	start	max	min	start	max	min	start	max	min	start	max	min	start	max
○ 100	140	180	○ 80	130	180												
● 90	130	170	● 70	120	170	○ 70	110	150									
			⊕ 60	110	160	⊕ 60	100	140									
○ 80	130	180	○ 80	120	160							○ 80	130	180			
● 70	120	170	● 70	110	150	○ 70	100	130				● 70	120	170			
			⊕ 60	100	140	⊕ 60	90	120				⊕ 65	110	155			
○ 70	110	150	○ 70	100	130							○ 70	110	150			
● 60	100	140	● 60	90	120	○ 60	80	100				● 60	100	140			
			⊕ 50	80	110	⊕ 50	70	90				⊕ 60	90	120			
									○ 100	140	180	○ 80	130	180	○ 80	130	180
									● 90	130	170	● 70	120	170	● 70	120	170
									⊕ 80	120	160	⊕ 50	100	150	⊕ 70	110	150

Complete workpiece materials p. M1.

INDEXABLE

A - TURNING

B - THREADING

C - GROOVING

D - MILLING

E - DRILLING

F - ACCESSORIES

G - SPARE PARTS

INDEXABLE

A - TURNING

B - THREADING

C - GROOVING

D - MILLING

E - DRILLING

F - ACCESSORIES

G - SPARE PARTS

DESIGNATION	DEPTH OF CUT			FEED RATE		
	ap (mm)			fn (mm/rev)		
	min	start	max	min	start	max
CCGW060202S-SE-2S	0.05	0.10	0.15	0.04	0.06	0.08
CCGW060202S-UE-2S	0.06	0.13	0.20	0.05	0.10	0.15
CCGW060202T-SF-2S	0.05	0.10	0.15	0.04	0.06	0.08
CCGW060204S-RE-2S	0.08	0.16	0.25	0.06	0.13	0.20
CCGW060204S-SE-2S	0.05	0.10	0.15	0.04	0.08	0.12
CCGW060204S-UE-2C	0.06	0.13	0.20	0.06	0.12	0.18
CCGW060204S-UE-2S	0.06	0.13	0.20	0.06	0.12	0.18
CCGW060204S-WE-2S	0.05	0.10	0.15	0.07	0.14	0.21
CCGW060204T-SF-2S	0.05	0.10	0.15	0.04	0.08	0.12
CCGW060208S-RE-2S	0.08	0.16	0.25	0.06	0.14	0.22
CCGW060208S-SE-2S	0.05	0.10	0.15	0.05	0.10	0.15
CCGW060208S-UE-2C	0.06	0.13	0.20	0.06	0.13	0.20
CCGW060208S-UE-2S	0.06	0.13	0.20	0.06	0.13	0.20
CCGW09T302S-SE-2S	0.05	0.10	0.15	0.04	0.06	0.08
CCGW09T302S-UE-2S	0.06	0.13	0.20	0.05	0.10	0.15
CCGW09T304S-RE-2S	0.08	0.16	0.25	0.06	0.13	0.20
CCGW09T304S-SE-2S	0.05	0.10	0.15	0.04	0.08	0.12
CCGW09T304S-UE-2C	0.06	0.13	0.20	0.06	0.12	0.18
CCGW09T304S-UE-2S	0.06	0.13	0.20	0.06	0.12	0.18
CCGW09T304S-WE-2S	0.05	0.10	0.15	0.07	0.14	0.21
CCGW09T304T-SF-2S	0.05	0.10	0.15	0.04	0.08	0.12
CCGW09T308S-RE-2S	0.08	0.16	0.25	0.06	0.14	0.22
CCGW09T308S-SE-2S	0.05	0.10	0.15	0.05	0.10	0.15
CCGW09T308S-UE-2C	0.06	0.13	0.20	0.06	0.13	0.20
CCGW09T308S-UE-2S	0.06	0.13	0.20	0.06	0.13	0.20
CCGW09T308S-WE-2S	0.05	0.10	0.15	0.07	0.15	0.23
CCGW09T308T-SF-2S	0.05	0.10	0.15	0.05	0.10	0.15
CCGW120404S-UE-2S	0.06	0.13	0.20	0.06	0.12	0.18
CCGW120408S-UE-2C	0.06	0.13	0.20	0.06	0.13	0.20
CCGW120408S-UE-2S	0.06	0.13	0.20	0.06	0.13	0.20
CNGA090308S-RE	0.50	1.50	2.50	0.08	0.16	0.24
CNGA090308S-UE	0.50	1.50	2.50	0.10	0.20	0.30
CNGA120404S-CF-4V	0.08	0.17	0.26	0.08	0.14	0.20
CNGA120404S-RE-4V	0.08	0.17	0.26	0.08	0.14	0.20
CNGA120404S-SE-4V	0.06	0.13	0.20	0.06	0.12	0.18
CNGA120404S-UE-4V	0.07	0.16	0.25	0.08	0.14	0.20
CNGA120404S-WE-4V	0.06	0.13	0.20	0.10	0.17	0.24
CNGA120408S-CF-4V	0.08	0.17	0.26	0.08	0.15	0.22
CNGA120408S-CFW-4V	0.08	0.17	0.26	0.10	0.19	0.28
CNGA120408S-CM-4V	0.30	0.50	0.70	0.08	0.16	0.24
CNGA120408S-CMW-4V	0.30	0.50	0.70	0.10	0.20	0.30
CNGA120408S-RE-4V	0.08	0.17	0.26	0.08	0.16	0.24
CNGA120408S-SE-4V	0.06	0.13	0.20	0.06	0.13	0.20
CNGA120408S-UE	1.00	2.00	3.00	0.10	0.20	0.30
CNGA120408S-UE-4C	0.07	0.16	0.25	0.08	0.15	0.22
CNGA120408S-UE-4V	0.07	0.16	0.25	0.08	0.15	0.22
CNGA120408S-WE-4V	0.06	0.13	0.20	0.10	0.19	0.28
CNGA120408T-SE-4C	0.06	0.13	0.20	0.06	0.13	0.20
CNGA120408T-SE-4V	0.06	0.13	0.20	0.06	0.13	0.20
CNGA120412S-CF-4V	0.08	0.17	0.26	0.08	0.16	0.24
CNGA120412S-CFW-4V	0.08	0.17	0.26	0.10	0.20	0.30
CNGA120412S-CM-4V	0.30	0.50	0.70	0.08	0.17	0.26
CNGA120412S-CMW-4V	0.30	0.50	0.70	0.10	0.22	0.34
CNGA120412S-RE-4V	0.08	0.17	0.26	0.08	0.17	0.26
CNGA120412S-SE-4V	0.06	0.13	0.20	0.06	0.14	0.22
CNGA120412S-UE	1.00	2.00	3.00	0.10	0.23	0.36
CNGA120412S-UE-4C	0.07	0.16	0.25	0.08	0.16	0.24
CNGA120412S-UE-4V	0.07	0.16	0.25	0.08	0.16	0.24

DESIGNATION	DEPTH OF CUT			FEED RATE		
	ap (mm)			fn (mm/rev)		
	min	start	max	min	start	max
CNGA120412S-WE-4V	0.06	0.13	0.20	0.10	0.20	0.30
CNGN090308S-UE	0.50	1.50	2.50	0.10	0.20	0.30
CNGN090312S-UE	0.50	1.50	2.50	0.10	0.23	0.36
CNGN090316S-UE	0.50	1.50	2.50	0.10	0.25	0.40
CNGN120408S-UE	1.00	2.00	3.00	0.10	0.20	0.30
CNGN120412S-UE	1.00	2.00	3.00	0.10	0.23	0.36
CNGN120416S-UE	1.00	2.00	3.00	0.10	0.25	0.40
CNGX120712S-UE	1.00	2.00	3.00	0.10	0.23	0.36
CNGX120716S-UE	1.00	2.00	3.00	0.10	0.25	0.40
DCGW070202S-SE-2S	0.05	0.10	0.15	0.04	0.06	0.08
DCGW070202S-UE-2S	0.06	0.13	0.20	0.05	0.10	0.15
DCGW070202T-SF-2S	0.05	0.10	0.15	0.04	0.06	0.08
DCGW070204S-RE-2S	0.08	0.16	0.25	0.06	0.13	0.20
DCGW070204S-SE-2S	0.05	0.10	0.15	0.04	0.08	0.12
DCGW070204S-UE-2S	0.06	0.13	0.20	0.06	0.12	0.18
DCGW070204T-SF-2S	0.05	0.10	0.15	0.04	0.08	0.12
DCGW070208S-RE-2S	0.08	0.16	0.25	0.06	0.14	0.22
DCGW070208S-SE-2S	0.05	0.10	0.15	0.05	0.10	0.15
DCGW070208S-UE-2S	0.06	0.13	0.20	0.06	0.12	0.18
DCGW11T302S-SE-2S	0.05	0.10	0.15	0.04	0.06	0.08
DCGW11T302S-UE-2S	0.06	0.13	0.20	0.05	0.10	0.15
DCGW11T302T-SF-2S	0.05	0.10	0.15	0.04	0.06	0.08
DCGW11T304S-RE-2S	0.08	0.16	0.25	0.06	0.13	0.20
DCGW11T304S-SE-2S	0.05	0.10	0.15	0.04	0.08	0.12
DCGW11T304S-SE-2S	0.05	0.10	0.15	0.04	0.08	0.12
DCGW11T304S-UE-2C	0.06	0.13	0.20	0.06	0.12	0.18
DCGW11T304S-UE-2S	0.06	0.13	0.20	0.06	0.12	0.18
DCGW11T304T-SF-2S	0.05	0.10	0.15	0.04	0.08	0.12
DCGW11T308S-RE-2S	0.08	0.16	0.25	0.06	0.14	0.22
DCGW11T308S-SE-2S	0.05	0.10	0.15	0.05	0.10	0.15
DCGW11T308S-UE-2C	0.06	0.13	0.20	0.06	0.13	0.20
DCGW11T308S-UE-2S	0.06	0.13	0.20	0.06	0.13	0.20
DCGW11T308T-SF-2S	0.05	0.10	0.15	0.05	0.10	0.15
DNGA150404S-SE-4V	0.06	0.13	0.20	0.06	0.12	0.18
DNGA150404S-UE-4V	0.07	0.16	0.25	0.08	0.14	0.20
DNGA150408S-SE-4V	0.06	0.13	0.20	0.06	0.13	0.20
DNGA150408S-UE-4V	0.07	0.16	0.25	0.08	0.15	0.22
DNGA150604S-RE-4S	0.08	0.17	0.26	0.08	0.14	0.20
DNGA150604S-SE-4S	0.06	0.13	0.20	0.06	0.12	0.18
DNGA150604S-UE-4S	0.07	0.16	0.25	0.08	0.14	0.20
DNGA150604S-UE-4V	0.07	0.16	0.25	0.08	0.14	0.20
DNGA150608S-RE-4S	0.08	0.17	0.26	0.08	0.16	0.24
DNGA150608S-SE-4S	0.06	0.13	0.20	0.06	0.13	0.20
DNGA150608S-UE	1.00	2.00	3.00	0.10	0.20	0.30
DNGA150608S-UE-4C	0.07	0.16	0.25	0.08	0.15	0.22
DNGA150608S-UE-4S	0.07	0.16	0.25	0.08	0.15	0.22
DNGA150608S-UE-4V	0.07	0.16	0.25	0.08	0.15	0.22
DNGA150612S-RE-4S	0.08	0.17	0.26	0.08	0.17	0.26
DNGA150612S-UE	1.00	2.00	3.00	0.10	0.23	0.36
DNGA150612S-UE-4S	0.07	0.16	0.25	0.08	0.16	0.24
DNGA150612S-UE-4V	0.07	0.16	0.25	0.08	0.16	0.24
MCC.R02S-CS-1C	0.05	0.10	0.15	0.04	0.06	0.08
MCC.R02T-CC-1C	0.05	0.10	0.15	0.04	0.06	0.08
MCC.R02T-GP-1C	0.06	0.13	0.20	0.05	0.10	0.15
MCC.R04T-GP-1C	0.06	0.13	0.20	0.06	0.12	0.18
MCCN.R02S-GP-4V	0.07	0.16	0.25	0.06	0.12	0.18
MCN.R02S-SE-4V	0.06	0.13	0.20	0.05	0.10	0.15
MCN.R02S-UE-4V	0.07	0.16	0.25	0.06	0.12	0.18
MCN.R04S-CC-4V	0.06	0.13	0.20	0.06	0.12	0.18

DESIGNATION	DEPTH OF CUT			FEED RATE		
	ap (mm)			fn (mm/rev)		
	min	start	max	min	start	max
MCN.R04S-GP-4V	0.07	0.16	0.25	0.08	0.14	0.20
MCN.R04S-SE-4V	0.06	0.13	0.20	0.06	0.12	0.18
MCN.R04S-UE-4V	0.07	0.16	0.25	0.08	0.14	0.20
MCN.R08S-CC-4V	0.06	0.13	0.20	0.06	0.13	0.20
MCN.R08S-GP-4V	0.07	0.16	0.25	0.08	0.15	0.22
MCN.R08S-SE-4V	0.06	0.13	0.20	0.06	0.13	0.20
MCN.R08S-UE-4V	0.07	0.16	0.25	0.08	0.15	0.22
MDN.R02S-CC-4V	0.06	0.13	0.20	0.05	0.10	0.15
MDN.R02S-GP-4V	0.07	0.16	0.25	0.06	0.12	0.18
MDN.R02S-SE-4V	0.06	0.13	0.20	0.05	0.10	0.15
MDN.R02S-UE-4V	0.07	0.16	0.25	0.06	0.12	0.18
MDN.R04S-CC-4V	0.06	0.13	0.20	0.06	0.12	0.18
MDN.R04S-GP-4V	0.07	0.16	0.25	0.08	0.14	0.20
MDN.R04S-SE-4V	0.06	0.13	0.20	0.06	0.12	0.18
MDN.R04S-UE-4V	0.07	0.16	0.25	0.08	0.14	0.20
MDN.R08S-CC-4V	0.06	0.13	0.20	0.06	0.13	0.20
MDN.R08S-GP-4V	0.07	0.16	0.25	0.08	0.15	0.22
MDN.R08S-SE-4V	0.06	0.13	0.20	0.06	0.13	0.20
MDN.R08S-UE-4V	0.07	0.16	0.25	0.08	0.15	0.22
RCGX090700S-UE	0.50	1.50	2.50	0.10	0.30	0.50
RCGX120700S-UE	0.50	2.00	3.50	0.10	0.35	0.60
RNGN060300S-UE	0.50	1.00	1.50	0.10	0.20	0.30
RNGN090300S-RE	0.50	1.50	2.50	0.15	0.35	0.55
RNGN090300S-RH	0.50	1.50	2.50	0.15	0.35	0.55
RNGN090300S-UE	0.50	1.50	2.50	0.10	0.30	0.50
RNGN090300T-SE	0.20	1.00	1.80	0.10	0.20	0.30
RNGN120300S-UE	0.50	2.00	3.50	0.10	0.35	0.60
RNGN120400S-RE	0.50	2.00	3.50	0.10	0.45	0.80
RNGN120400S-UE	0.50	2.00	3.50	0.10	0.35	0.60
SNGA120404S-UE-8V	0.07	0.16	0.25	0.08	0.14	0.20
SNGA120408S-UE	1.00	2.00	3.00	0.10	0.20	0.30
SNGA120408S-UE-8V	0.07	0.16	0.25	0.08	0.15	0.22
SNGA120412S-UE	1.00	2.00	3.00	0.10	0.23	0.36
SNGA120412S-UE-8V	0.07	0.16	0.25	0.08	0.16	0.24
SNGN090308S-UE	0.50	1.50	2.50	0.10	0.20	0.30
SNGN090312S-UE	0.50	1.50	2.50	0.10	0.23	0.36
SNGN090316S-UE	0.50	1.50	2.50	0.10	0.25	0.40
SNGN090412S-UE	0.50	1.50	2.50	0.10	0.23	0.36
SNGN120408S-UE	1.00	2.00	3.00	0.10	0.20	0.30
SNGN120412S-UE	1.00	2.00	3.00	0.10	0.23	0.36
SNGN120416S-UE	1.00	2.00	3.00	0.10	0.25	0.40
SNGX120412S-UE	1.00	2.00	3.00	0.10	0.23	0.36
SNGX120712S-UE	1.00	2.00	3.00	0.10	0.23	0.36
SNGX120716S-UE	1.00	2.00	3.00	0.10	0.25	0.40
TCGW090204S-UE-3C	0.06	0.13	0.20	0.06	0.12	0.18
TCGW110204S-RE-3S	0.08	0.16	0.25	0.06	0.13	0.20
TCGW110204S-SE-3S	0.05	0.10	0.15	0.04	0.08	0.12
TCGW110204S-UE-3C	0.06	0.13	0.20	0.06	0.12	0.18
TCGW110204S-UE-3S	0.06	0.13	0.20	0.06	0.12	0.18
TCGW110204T-SE-3C	0.05	0.10	0.15	0.04	0.08	0.12
TCGW110208S-RE-3C	0.08	0.16	0.25	0.06	0.14	0.22
TCGW110208S-RE-3S	0.08	0.16	0.25	0.06	0.14	0.22
TCGW110208S-SE-3S	0.05	0.10	0.15	0.05	0.10	0.15
TCGW110208S-UE-3C	0.06	0.13	0.20	0.06	0.13	0.20
TCGW110208S-UE-3S	0.06	0.13	0.20	0.06	0.13	0.20
TCGW16T304S-RE-3S	0.08	0.16	0.25	0.06	0.13	0.20
TCGW16T304S-SE-3S	0.05	0.10	0.15	0.04	0.08	0.12
TCGW16T304S-UE-3C	0.06	0.13	0.20	0.06	0.12	0.18

DESIGNATION	DEPTH OF CUT			FEED RATE		
	ap (mm)			fn (mm/rev)		
	min	start	max	min	start	max
TCGW16T304S-UE-3S	0.06	0.13	0.20	0.06	0.12	0.18
TCGW16T308S-RE-3C	0.08	0.16	0.25	0.06	0.14	0.22
TCGW16T308S-RE-3S	0.08	0.16	0.25	0.06	0.14	0.22
TCGW16T308S-SE-3S	0.05	0.10	0.15	0.05	0.10	0.15
TCGW16T308S-UE-3C	0.06	0.13	0.20	0.06	0.13	0.20
TCGW16T308S-UE-3S	0.06	0.13	0.20	0.06	0.13	0.20
TNGA160404S-RE-6V	0.08	0.17	0.26	0.08	0.14	0.20
TNGA160404S-SE-6V	0.06	0.13	0.20	0.06	0.12	0.18
TNGA160404S-UE-6C	0.07	0.16	0.25	0.08	0.14	0.20
TNGA160404S-UE-6V	0.07	0.16	0.25	0.08	0.14	0.20
TNGA160408S-RE-6V	0.08	0.17	0.26	0.08	0.16	0.24
TNGA160408S-SE-6V	0.06	0.13	0.20	0.06	0.13	0.20
TNGA160408S-UE	1.00	2.00	3.00	0.10	0.20	0.30
TNGA160408S-UE-6C	0.07	0.16	0.25	0.08	0.15	0.22
TNGA160408S-UE-6V	0.07	0.16	0.25	0.08	0.15	0.22
TNGA160412S-RE-6V	0.08	0.17	0.26	0.08	0.17	0.26
TNGA160412S-SE-6V	0.06	0.13	0.20	0.06	0.14	0.22
TNGA160412S-UE	1.00	2.00	3.00	0.10	0.23	0.36
TNGA160412S-UE-6C	0.07	0.16	0.25	0.08	0.16	0.24
TNGA160412S-UE-6V	0.07	0.16	0.25	0.08	0.16	0.24
TNGN110308S-UE	0.50	1.50	2.50	0.10	0.20	0.30
TNGN160408S-UE	1.00	2.00	3.00	0.10	0.20	0.30
TPGW090204S-UE-3S	0.06	0.13	0.20	0.06	0.12	0.18
TPGW110302S-UE-3S	0.06	0.13	0.20	0.05	0.10	0.15
TPGW110304S-RE-3S	0.08	0.16	0.25	0.06	0.13	0.20
TPGW110304S-SE-3S	0.05	0.10	0.15	0.04	0.08	0.12
TPGW110304S-UE-3S	0.06	0.13	0.20	0.06	0.12	0.18
TPGW110308S-SE-3S	0.05	0.10	0.15	0.05	0.10	0.15
TPGW110308S-UE-3S	0.06	0.13	0.20	0.06	0.13	0.20
VBGW110302S-SE-2S	0.05	0.10	0.15	0.04	0.06	0.08
VBGW110302S-UE-2S	0.06	0.13	0.20	0.05	0.10	0.15
VBGW110302T-SF-2S	0.05	0.10	0.15	0.04	0.06	0.08
VBGW110304S-SE-2S	0.05	0.10	0.15	0.04	0.08	0.12
VBGW110304S-UE-2S	0.06	0.13	0.20	0.06	0.12	0.18
VBGW110304T-SF-2S	0.05	0.10	0.15	0.04	0.08	0.12
VBGW160402S-SE-2S	0.05	0.10	0.15	0.04	0.06	0.08
VBGW160402S-UE-2S	0.06	0.13	0.20	0.05	0.10	0.15
VBGW160402T-SF-2S	0.05	0.10	0.15	0.04	0.06	0.08
VBGW160404S-RE-2C	0.08	0.16	0.25	0.06	0.13	0.20
VBGW160404S-RE-2S	0.08	0.16	0.25	0.06	0.13	0.20
VBGW160404S-SE-2S	0.05	0.10	0.15	0.04	0.08	0.12
VBGW160404S-UE-2C	0.06	0.13	0.20	0.06	0.12	0.18
VBGW160404S-UE-2S	0.06	0.13	0.20	0.06	0.12	0.18
VBGW160404T-SF-2S	0.05	0.10	0.15	0.04	0.08	0.12
VBGW160408S-RE-2C	0.08	0.16	0.25	0.06	0.14	0.22
VBGW160408S-RE-2S	0.08	0.16	0.25	0.06	0.14	0.22
VBGW160408S-SE-2S	0.05	0.10	0.15	0.05	0.10	0.15
VBGW160408S-UE-2C	0.06	0.13	0.20	0.06	0.13	0.20
VBGW160408S-UE-2S	0.06	0.13	0.20	0.06	0.13	0.20
VBGW160408T-SF-2S	0.05	0.10	0.15	0.05	0.10	0.15
VCGW110304S-SE-2S	0.05	0.10	0.15	0.04	0.08	0.12
VCGW110304S-UE-2S	0.06	0.13	0.20	0.06	0.12	0.18
VCGW160404S-SE-2S	0.05	0.10	0.15	0.04	0.08	0.12
VCGW160404S-UE-2S	0.06	0.13	0.20	0.06	0.12	0.18
VCGW160408S-SE-2S	0.05	0.10	0.15	0.05	0.10	0.15
VCGW160408S-UE-2S	0.06	0.13	0.20	0.06	0.13	0.20
VNGA160404S-SE-4V	0.06	0.13	0.20	0.06	0.12	0.18
VNGA160404S-UE-4C	0.07	0.16	0.25	0.08	0.14	0.20

INDEXABLE

A - TURNING

B - THREADING

C - GROOVING

D - MILLING

E - DRILLING

F - ACCESSORIES

G - SPARE PARTS

DESIGNATION	DEPTH OF CUT			FEED RATE		
	ap (mm)			fn (mm/rev)		
	min	start	max	min	start	max
VNGA160404S-UE-4V	0.07	0.16	0.25	0.08	0.14	0.20
VNGA160408S-SE-4V	0.06	0.13	0.20	0.06	0.13	0.20
VNGA160408S-UE-4C	0.07	0.16	0.25	0.08	0.15	0.22
VNGA160408S-UE-4V	0.07	0.16	0.25	0.08	0.15	0.22
WNGA080404S-RE-6V	0.08	0.17	0.26	0.08	0.14	0.20
WNGA080404S-SE-6V	0.06	0.13	0.20	0.06	0.12	0.18
WNGA080404S-UE-6V	0.07	0.16	0.25	0.08	0.14	0.20
WNGA080408S-RE-6V	0.08	0.17	0.26	0.08	0.16	0.24
WNGA080408S-SE-6V	0.06	0.13	0.20	0.06	0.13	0.20
WNGA080408S-UE	1.00	2.00	3.00	0.10	0.20	0.30
WNGA080408S-UE-6V	0.07	0.16	0.25	0.08	0.15	0.22
WNGA080412S-RE-6V	0.08	0.17	0.26	0.08	0.17	0.26
WNGA080412S-UE	1.00	2.00	3.00	0.10	0.23	0.36
WNGA080412S-UE-6V	0.07	0.16	0.25	0.08	0.16	0.24