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GRADE

APPLICATION

CBN-PCBN, PCD

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PCBN Inserts

Grade	Machining Mode	Workpiece Material	Features Direction	Application Industry
N-1520	Rough	Combined impact and wear resistance. Gray cast iron, high hardness alloy cast iron, hardened steel	↑ Impact resistance	Roll, Slurry pump, Brake disc, Rolling mortar wall etc
N-7000	Rough	Excellent impact and wear resistance. High-chrome iron, high hardness alloy cast iron, gray cast iron, high manganese steel	↑ Impact resistance	Roll, Slurry pump, Brake disc, Rolling mortar wall etc
N-1400 S-1400	Semi finishing / Finishing	Excellent comprehensive performance and good wear resistance. Gray cast iron, Hardened steel (>45HRC)	↑ Impact resistance ↓ Wear resistance	Brake disc, Brake drum, Compressor parts, Gear, Bearing etc
N-1440 S-1440	Semi finishing / Finishing	Excellent wear resistance. Gray cast iron	↑ Impact resistance	Brake disc, Brake drum, Compressor parts etc
N-1800	Rough / Semi finishing	Excellent impact resistance. Hardened steel, Cast high speed steel, Surfacing material	↑ Impact resistance	Large gear, Mine machinery, Roll etc
N-1900 S-1900	Finishing	Hardened steel with hardness > 45HRC	↑ Impact resistance ↓ Wear resistance	Gear, Bearing etc

K- Inserts

Grade	Machining Mode	Workpiece Material	Features Direction	Cutting Speed (Vc) (m/min)	Coolant
K-1501	Continuous to heavy interrupted finishing	Gray cast iron, Surface hardened alloy	↑ Impact resistance ↓ Wear resistance	600–1200	Dry, wet
K-1502	Continuous to medium interrupted finishing	Gray cast iron, Powder metallurgy	↑ Impact resistance ↓ Wear resistance	90–200	Dry, wet
K-1503	Continuous to light interrupted finishing	Powder metallurgy	↑ Impact resistance ↓ Wear resistance	90–200	Dry, wet
K-1904	Continuous high-speed finishing	Hardened steel	↑ Impact resistance ↓ Wear resistance	180–300	Dry, wet
K-1905	Continuous, light interrupted finishing	Bearing steel, Cemented steel	↑ Impact resistance ↓ Wear resistance	100–175	Dry, wet
K-1906	Continuous, heavy interrupted finishing	Cemented steel	↑ Impact resistance ↓ Wear resistance	100–200	Dry

S Brazed Solid Tip Insert

Grade	Machining Model	Applicable Industry	Workpiece Material	Feature
S-1526	Rough machining / Semi-finishing	- Brake disc - Parts of compressor	Gray cast iron	- Excellent combination of toughness and wear resistance, good edge stability- Improved machinability, suitable for high-speed continuous machining under harsh conditions
S-1900	Rough machining / Semi-finishing	- Gear- Bearing - Mining machinery - Coal mine machinery	Hardened steel Surface overlaying material	- Balanced impact toughness and good wear resistance- Better safety when integrated to continuous machining under various working conditions

K Single-layer brazed Coated Insert

Grade	Machining Model	Applicable Industry	Workpiece Material	Feature	Cutting speed Vc (m/min)	Cutting fluid
K-1501X7	Finishing	- Brake disc- Gear	Gray cast iron Case hardened alloy	- Mainly used for gray cast iron workpieces processing- High toughness, strong impact strength- Good wear resistance under high-speed machining	600-1200	Dry or wet
K-1502X7	Finishing	- Brake disc- Gear	Gray cast iron Powder metallurgy	- Capable of the machining of various materials- Excellent toughness and good hardness- Long tool life and stable performance	90-200	Dry or wet
K-1904X6	Finishing	- Gear- Bearing	Hardened steel	- High red hardness, excellent wear resistance and toughness- High cutting efficiency and stability under high-speed cutting	180-300	Dry or wet
K-1905X6	Finishing	- Gear- Bearing	Hardened steel Cemented steel	- High cutting performance and wear resistance- Improved machinability and stability	100-175	Dry or wet
K-1906X6	Finishing	- Gear- Bearing	Cemented steel	- Good cutting edge toughness and wear resistance- Improved machining accuracy and surface finish	100-200	Dry or wet

N Impact-resistant Solid Insert

Grade	Machining Model	Applicable Industry	Workpiece Material	Feature
N-7000	Rough machining	- Roll - Slurry pump - Rolling mortar wall	- High nickel-chromium, high hardness alloy cast iron, cast high speed steel - High manganese steel	- High hardness with excellent impact resistance, good cutting edge stability - Suitable for heavy loading rough machining from interrupted to continuous working conditions
N-1526	Rough machining / Semi-finishing	- Brake disc - Brake drum - Parts of compressor	Gray cast iron	- Excellent combination of toughness and wear resistance, good edge stability - Improved machinability, suitable for high-speed continuous machining under various working conditions
N-1900	Rough machining / Semi-finishing	- Gear - Bearing - Mining machinery - Coal mine machinery	- Hardened steel - Surface overlaying material	- Balanced impact toughness and good wear resistance - Better safety when integrated to continuous machining under various working conditions

PCBN Milling

Grade	Machining Mode	Application Range	Application Industry
N-0025	Rough / Finishing	Suitable for rough/semi finishing and finishing milling of gray cast iron etc. Suitable for rough/semi finishing/finishing milling of high cast iron etc. Suitable for rough milling/semi finishing/finishing milling of hardened steel etc.	Automotive, Roll, Machine tool, Mould etc.

PCBN Inserts

Grade	Features	Application	Grain size
P520	Suitable for mirror machining and high finishing	Low Slicon Aluminium alloy, titanium and titanium alloy, fiber reinforced composite materials	1μm
P020	General PCD grade with impact resistance and wear resistance	Low and medium silicon aluminium alloys, metal-based composite materials, wood-based composite materials, graphite	10μm
P220	The use of mixed particle sizes gives the blank extremely high wear resistance, termal stability and good impact resistance	High silicon aluminium alloy, wood-based composite materials, metal-based composite materials, high-strength cast iron, stone, graphite	2-30μm

K Single-layer brazed Coated Insert

Grade	Machining Model	Applicable Industry	Workpiece Material	Feature	Cutting speed Vc (m/min)	Cutting fluid
K-1500	Finishing	- Brake disc- Gear	Gray cast iron	- High CBN content, ultra-fine grain CBN material, excellent surface finish and cost performance	600-1200	Dry or wet
K-1880	Finishing	- Gear- Bearing	Powder metallurgy	- Specialized wear resistance coating and excellent machinability, good cost performance	90-200	Dry or wet
K-1920	Finishing	- Gear- Bearing	Hardened steel	- High cutting edge strength and wear resistance - Excellent surface finish and long tool life	100-175	Dry or wet

Multi-layer composite nano-coating for PCBN

Coating	Feature	Application	Workpiece Material	Applicable Industry	Cutting speed Vc (m/min)	Cutting fluid
X6	- Bronze color, high hardness, good coating adhesion, small friction coefficient, suitable for high-speed continuous machining, high cutting efficiency- Suitable for high-speed, high-temperature machining	High-speed continuous machining	Gray cast iron Hardened steel	Bearing gear Hardened steel	120-300	Dry or wet
X7	- Black color, good toughness, suitable for interrupted turning of gray cast iron and hardened steel, good wear resistance	General machining	Gray cast iron Hardened steel	Bearing gear Hardened steel	80-150	Dry or wet

Common cutting parameter for WorldCutters Turning Inserts

Workpiece	Common material	Hardness	Cutting speed Vc (m/min)	Cutting depth ap (mm)	Feed rate (mm/rev)	Recommended stuctural form (model)
Gear	20CrMnTi	HRC58-65	100-300	0,1-0,5	0,05-0,2	K
Bearing	Gcr15	HRC55-65	100-220	0,1-0,5	0,05-0,2	K/V/N
Large Gear	40CrMo	HB310-360	40-120	0,5-5,0	0,2-1,0	N
	18CrBiMo	HRC58-62	60-120	0,3-1,0	0,1-0,3	N
Slewing Ring	42CrMo	HRC55-62	80-120	0,2-2,0	0,1-0,5	N
Brake disc	HT250	HB220-260	500-1200	0,2-0,5	0,1-0,4	N/V
	HT250	HB220-260	400-1200	0,5-3,0	0,1-0,4	N/V
Brake drum	HT250	HB220-260	350-1200	0,2-0,5	0,1-0,4	N/V
	HT250	HB220-260	280-1200	0,5-3,0	0,1-0,4	N/V
Compressor bearing	HT250	HB220-260	500-1200	0,3-2,5	0,2-0,4	N/V
Cylinder liner	Boron copper cast iron	HB180-260	500-800	0,1-0,3	0,1-0,2	N/V/K
			150-500	0,3-1,0	0,1-0,3	N/V/K
Roll	High nickel-chromium	HSD78	30-50	1,0-8,0	0,5-1,5	N
	High ferrochrome	HSD75	30-45	1,0-10,0	0,5-1,5	N
	High chromium steel	HSD75	20-60	1,0-10,0	0,5-1,5	N
	High speed steel	HSD88	30-60	0,3-3,0	0,5-1,5	N
	High carbon semi-steel	HSD70	45-80	1,0-10,0	0,5-1,5	N
	Chilled cast iron	HSD67	40-60	1,0-10,0	0,5-1,5	N
Slurry pump	Weaar resistant white cast iron	HRC50-60	50-100	0,5-4,0	0,2-0,5	N
Rolling mortar wall	High manganese steel	HB300-500	80-200	0,5-8,0	0,2-0,5	N

Common cutting parameter for WorldCutters Milling Inserts

Workpiece	Hardness of workpiece	Cutting edge angle Kr	Cutting speed Vc (m/min)	Cutting depth ap (mm)	Feed rate (mm/rev)	Cutting fluid
Gray cast iron	200HB	75°	500-2000	0,5-5,0	0,1-0,2	Dry cut
Gray cast iron	55HRC	75°	150-300	0,5-2,0	0,05-0,2	Dry cut
Hardened steel	60HRC	75°	80-200	0,2-0,5	0,05-0,1	Dry cut

TYPE	GRADE	FEATURES	APPLICATION	Suitable for processed materials	Suitable industry	Recommended Vc (m/min)
(N) Premium Grade	KN-1526	1. Excellent wear resistance and stability, good universality2. Suitable for rough and fine machining of gray cast iron materials3. Finishing of high-hardness alloy cast iron	Rough & Finishing	Gray cast iron	Brake discs, Brake drums,Flywheel, Air-Conditioning	400-1000
	N-1526	1. Excellent wear resistance and stability, good universality2. Suitable for rough and fine machining of gray cast iron materials3. Finishing of high-hardness alloy cast iron	Finishing	High-hardness alloy cast iron	Roll	30-100
	N-1440	1. High hardness, excellent wear resistance, suitable for continuous high-speed machining of gray cast iron, and high hardness materials such as tungsten carbide.2. Especially suitable for finishing.	Finishing	Grey cast iron, Cemented Carbide	Brake discs, Brake drums, Flywheel, Tungsten Carbide Roll Ring Air-Ronditioning Rompressor Bearing,Gear	400-1000
	N-1400	1. It has both good wear resistance and impact resistance.2. Suitable for general machining of gray cast iron and hardened steel	Rough & Finishing	Gray cast ironHardened steel High hardness alloy	Air-Ronditioning Compressor	400-800
	N-1400	1. It has both good wear resistance and impact resistance.2. Suitable for general machining of gray cast iron and hardened steel	Rough & Finishing	Hardened steel	Bearing,Gear	80-150
	N-1520	High hardness, excellent impact resistance, suitable for rough and finishing machining of gray cast iron and high-hardness alloy cast iron	Rough & Finishing	High hardness alloy, Cast iron, Cast High-speed Steel, High Manganese Steel	Roller, Slurry pump, Rolling mortar wall	30-100
	N-1520	High hardness, excellent impact resistance, suitable for rough and finishing machining of gray cast iron and high-hardness alloy cast iron	Rough & Finishing	Gray cast iron	Brake discs, Brake drums	400-1000
	N-7000	High hardness, excellent impact resistance, suitable for rough and finishing machining of gray cast iron and high-hardness alloy cast iron	Rough & Finishing	High hardness alloy, Cast iron, Cast High-speed Steel, High Manganese Steel	Roller, Slurry pump, Rolling mortar wall	30-100
	N-1900	Excellent heat resistance and impact resistance, suitable for continuous and interrupted processing of hardened steel	Continuous & Interrupted	Hardened steel, Laser cladding	Slewing Ring, Bearing Gear, Laser cladding	80-150
	N-5000	High hardness, excellent wear resistance, suitable for continuous high-speed processing of gray cast iron and processing of high-hard cast iron, good economics	Rough & Finishing & Continuous	Gray cast iron, High-hardness alloy cast iron	Brake discs, Brake drums, Flywheel, Roll	400-1000

TYPE	GRADE	FEATURES	APPLICATION	Suitable for processed materials	Suitable industry	Recommended Vc（m/min)
(S) Premium Grade	S-1526	1. Excellent wear resistance and stability, good universality, 2. Suitable for rough and fine machining of gray cast iron materials, 3. Finishing of high-hardness alloy cast iron	Rough & Finishing	Gray cast iron	Brake discs, Brake drums, Flywheel, Air-ConditioningCompressor	400-1000
	S-1526	1. Excellent wear resistance and stability, good universality, 2. Suitable for rough and fine machining of gray cast iron materials, 3. Finishing of high-hardness alloy cast iron	Finishing	High hardness alloy cast iron	Roll	30-100
	S-1440	1. High hardness, excellent wear resistance, suitable for continuous high-speed machining of gray cast iron, and high hardness materials such as tungsten carbide. 2. Especially suitable for finishing.	Finishing	Grey cast iron Cemented carbide	Brake discs, brake drums, Flywheel, Tungsten carbide roll ring	400-1000
	S-1400	1. It has both good wear resistance and impact resistance, 2. Suitable for general machining of gray cast iron and hardened steel	Rough & Finishing	Gray cast iron	Air-conditioning compressor	400-800
	S-1400	1. It has both good wear resistance and impact resistance, 2. Suitable for general machining of gray cast iron and hardened steel	Rough & Finishing	Hardened steel	Bearing,Gear	80-150
	S-1520	High hardness and excellent impact resistance, Suitable for rough and finishig machining of gray cast iron and high-hardness alloy cast iron	Rough & Finishing	High hardness alloy cast iron,Cast high-speed steel,High manganese steel	Roller, slurry pump, rolling mortar wall	30-100
	S-1520	High hardness and excellent impact resistance, Suitable for rough and finishig machining of gray cast iron and high-hardness alloy cast iron	Rough & Finishing	Gray cast iron	Brake discs,brake drums	400-1000
	S-1900	Excellent heat resistance and impact resistance, suitable for continuous and interrupted processing of hardened steel	Continuous & Interrupted	Hardened steel, Laser cladding	Slewing ring, bearing gear Laser cladding	80-150
(S) Economic Grade	S-5020	It has high hardness and good wear resistance. It is suitable for continuous high-speed processing of gray cast iron.It is recommended that the cutting depth should not exceed 2mm.	High-speed continuous finishing processing	Gray cast iron	Brake discs, brake drums, Flywheel, air- conditioning compressor	400-1000
	S-7220	Excellent heat resistance and good impact resistance, suitable for continuous and lightly interrupted processing of hardened steel.It is recommended that the cutting depth should not exceed 1mm.	High-speed continuous, Lightly interruptedprocessing	Hardened steel	Bearing,Gear	100-180

TYPE	GRADE	FEATURES	APPLICATION	Suitable for processed materials	Suitable industry	Recommended Vc（m/min)
(K) Premium Grades	K-1501	Suitable for continuous and intermittent machining of gray cast iron and high-hardness cast iron	Highefficiency processing	Gray cast iron	Cylinder liner	600-1200
	K-1501	Suitable for continuous and intermittent machining of gray cast iron and high-hardness cast iron	Highefficiency processing	High-hardness alloy cast iron	Mining Machine	90-200
	K-1502	Super impact resistance, Suitable for intermittent processing of quenched steel, High-hardness alloy cast iron, powder metallurgy	Interrupted processing	Hardened steel, Powder metallurgy	Turbocharger	90-200
	K-1502	Super impact resistance, Suitable for intermittent processing of quenched steel, High-hardness alloy cast iron, powder metallurgy	Interrupted processing	Gray cast iron	Engine block	600-1200
	K-1516	Super impact resistance, suitable for Heavy intermittent processing of quenched steel, high-hardness alloy cast iron, powder metallurgy	Heavy Interrupted processing	Hardened steel, Powder metallurgy	Gears	90-200
	K-1516	Super impact resistance, suitable for Heavy intermittent processing of quenched steel, high-hardness alloy cast iron, powder metallurgy	Heavy Interrupted processing	Gray cast iron	Brake disc, Turbocharger	600-1200
	K-1904	Excellent heat resistance, excellent resistance to crater wear	High-speed continuous finishingprocessing	Hardened steel	Bearing,Gear	180-300
	K-1902	Excellent wear resistance, good impact resistance, suitable for continuous and light intermittent processing of hardened steel	Continuous or slightly intermittent	Hardened steel	Bearing,Gear	180-300
	K-1926	Sub-micron particle size, good wear resistance, suitable for high-speed continuous processing of quenched steel	Continuous & IntermittentFinishing	Hardened steel	Bearing,Gear	180-300
	K-1903	Excellent wear resistance and Good toughness	Continuous & Slightly intermittent	Hardened steel	Bearing,Gear	100-180
	KS-1902	The composite sheet has a full CBN structure, no carbide base, and has better impact resistance and thermal conductivity.	High-speed continuous, weakly interruptedprocessing	Hardened steel	Bearing,Gear	180-300
	KS-1903	The composite sheet has a full CBN structure, no carbide base, and has better impact resistance and thermal conductivity.	Continuous, lightly interrupted processing	Hardened steel	Bearing,Gear	100-180
	KS-1905	The composite sheet has a full CBN structure, no carbide base, and has better impact resistance andthermal conductivity.	Moderately Intermittent	Hardened steel	Bearing,Gear	100-170
	K-1905	Excellent wear resistance and good toughhness	High-speed continuous, Light interrupted processing	Hardened steel	Bearing,Gear	100-180
	K-1906	Excellent impact resistance, Suitable for medium and heavy interrupted processing of quesnched steel	Medium to heavy interrupted processing	Hardened steel	Bearing,Gear	100-200
	KS-1906	The composite sheet has a full CBN structure, no carbide base, and has better impact resistance and thermal conductivity.	Medium and heavy intermittent processing	Hardened steel	Bearing,Gears, Valve seats, Universal joints	80-150
(K) Economic Grade	K-1500	Excellent impact resistance, high wear resistance, excellent surface finish	Medium to heavyinterrupted processing	Grey cast iron, Case hardening superalloy,Powder metallurgy	Powder metallurgy, Engine block	90-200
	K-1880	Good impact resistance, good chemical inertness and edge wear resistance	Continuous to Medium Interrupted Processing	Hardened steel	Bearing,Gear	100-180
	K-1920	Excellent impact resistance, good chemical inertness and edge wear resistance	Medium to heavy interrupted processing	Hardened steel	Bearing,Gear	100-180

TYPE	GRADE	FEATURES	APPLICATION	Suitable for processed materials	Suitable industry	Recommended Vc（m/min)
(V) Grade	V-5000	It has high hardness and good wear resistance. It is suitable for continuous high-speed processing of gray cast iron.It is recommended that the cutting depth should not exceed 2mm.	High-speed continuous finishing processing	Gray cast iron	Brake discs, brake drums, Flywheel, air-conditioningcompressor	400-1000
	V-1440	Excellent heat resistance and good impact resistance, suitable for continuous and lightly interrupted processing of hardned steel. It is remonnended that the cutting depth should not exceed 1mm.	High-speed continuous finishing processing	Hardened steel	Bearing,Gear	100-180
	V-1200	The coating improves the ability of insert to suppress the crater wear	Finishing	Gray cast iron, Hardened steel	Brake discs, brake drums, Flywheel, air-conditioningcompressor	400-1000

TYPE	GRADE	FEATURES	APPLICATION	Suitable for processed materials	Suitable industry	Recommended Vc（m/min)
Coating	X1	The golden yellow surface layer makes the cutting edge easy to identify and reduces friction with iron filings, the small grain size and dense structure ensure the high hardness andtoughness of the coating, the stable physical phase ensures the excellent thermal hardness of the coating. It is suitable for continuous to intermittent processing of quenched steel materials (HRC≥55), and can realize general processing of quenched steel materials.	High-speed continuous intermittent processing	Hardened steel	Bearing,Gear, Hardened steel	120-200
	X6	The color is bronze, the hardness is high, and the coating adhesion is good, the friction coefficient is small, suitable for hard turning hardened steel, and it is recommended for dry cutting. The best coating for high-speed and high-temperature processing.	High-speed continuous processing	Hardened steel	Bearing,Gear, Hardened steel	120-200
	X7	The color is black and the toughness is good. It is suitable for intermittent turning of gray cast iron and quenched steel, either or wet cutting with good versatility.	Universal processing	Gray cast iron, Hardened steel	Bearing,Gear, Gray cast iron	80-150
	X9	The golden yellow surface makes the cutting edge easy to identify and reduces friction with iron filings, high hardness and high oxidation resistance, a more stable phase ensures high- temperature thermal stability, suitable for continuous processing of high-hardness materials (HRC≥55) , light intermittent machining, has better wear resistance than 180S coating and improves tool stability.	Universal processing	Hardened steel	Bearing,Gear, Hardened steel	120-200

TYPE	GRADE	FEATURES	APPLICATION	Grain size
PCD	P520	Suitable for mirror machining and high finishing	Low Slicon Aluminium alloy, titanium and titanium alloy, fiber reinforced composite materials	1μm
	P020	General PCD grade with impact resistance and wear resistance	Low and medium silicon aluminium alloys, metal-based composite materials, wood-based composite materials, graphite	10μm
	P220	The use of mixed particle sizes gives the blank extremely high wear resistance, termal stability and good impact resistance	High silicon aluminium alloy, wood-based composite materials, metal-based composite materials, high-strength cast iron, stone, graphite	2-30μm

PCD Turning Inserts – Superior Performance and Durability

PCD (Polycrystalline Diamond) turning inserts offer excellent performance and long life when machining abrasive materials. They are ideal for precision applications in the automotive, aerospace, and electronics industries where high surface quality is crucial.

Advantages:

- **High Wear Resistance:** PCD inserts provide 50-100 times longer tool life compared to carbide inserts, reducing tool costs.
- **Superior Surface Finish:** Low friction and high hardness deliver smooth surfaces during machining.
- **Low Cutting Forces and High Speeds:** PCD inserts perform stably at high speeds with low cutting forces.

Applications:

- **Composites and Non-Ferrous Metals:** Ideal for machining carbon fiber, aluminum, and copper.
- **Plastics and Resins:** Excellent for materials requiring precise surface finishes.

Technical Parameters:

- **Cutting Speed:** 200 - 400 m/min.
- **Feed Rate:** 0.05 - 0.3 mm/rev.
- **Depth of Cut:** 0.1 - 3.0 mm.

Maintenance: Regular visual inspections and wear monitoring extend tool life and maintain machining quality.

WORKPIECE	MACHINING MOSITION	WORKPIECE MATERIAL	WORKPIECE HARDNESS	INSERT SPECIFICATION	PARAMETERS
Clinder Liner	Inner hole	Grey Cast Iron	HB230-260	K-1501, SCGW09T308	Vc=300m/min ap=0.55mm f=0.25mm/r
Planetary carrier	Inner hole	Powder metallurgy	HB190-210	K-1502, VBGW160406	Vc=200m/min ap=0.2mm f=0.15mm/r
Gear	Inner hole	20CrMoH	HRC58-64	K-1904 X9, CNGA120408	Vc=184m/min ap=0.1mm f=0.08mm/r
Planetary carrier	Arc surface	20CrMnTi	HRC58-65	KS-1902 X1, TNGA160408	Vc=180m/min ap=0.08mm f=0.05mm/r
Planetary carrier	Inner hole	20CrMnTi	HRC58-62	KS-1905 X9, CCGW09T308	Vc=130m/min ap=0.08mm f=0.05mm/r
Gear shaft	Outer circle	20CrMo	HRC58-65	KS-1906 X7, VNGA160408	Vc=115m/min ap=0.1mm f=0.05mm/r
Engine block	Front and rear end faces	HT250	HB180-240	N-1400, SNEX120412ZZ	ap=0.5mm f=0.1mm/r
Brake disc	Upper and lower braking surfaces	HT250	HB180-220	N-1440, SCMN0904AB	ap=0.2mm f=0.4mm/r
Strip roll	Shoulder, Roll barrel	High NiCr	HSD75-85	N-1526, RNMN201000	Vc=40m/min ap=10.0mm f=0.5mm/r
Large gear (12m)	Addendum circle	40CrMo	HB280-360	N-1900, SNMN201020	Vc=50m/min roughing ap=4mm， finishing ap=0.5mm f=0.7mm
Rebar roll	Outer circle of roll body, groove	High NiCr	HSD80-85	N-1526, RCMX090700Y	Vc=103m/min ap=0.3mm f=0.2mm/r
Mill roll	Outer circle of roll body, groove	High nickel	HSD80	N-7000, RNMN201000	Vc=50m/min ap=12.0mm f=0.8mm/r
Air conditioning compressor cylinder	End faces	HT200	HB170-210	S-1400, WNGA080412	Vc=400m/min ap=2.0mm f=0.2mm/r
Valve seat	Inner hole	Powder metallurgy	HRC20-45	K-1500, VBGW110308	Vc=200m/min ap=0.2mm f=0.1mm/r

WORKPIECE	MACHINING MOSITION	WORKPIECE MATERIAL	WORKPIECE HARDNESS	INSERT SPECIFICATION	PARAMETERS
Motor shaft	End faces	20CrMoTiH	HRC58-62	K-1500 X7, CNGA120408	Vc=110m/min ap=0.15mm f=0.09mm/r
Gear	Inner hole	20CrMo	HRC58-60	K-1880 X1, CCGW09T308	Vc=155m/min ap=0.05mm f=0.05mm/r
Gear	End faces	42CrMo	HRC60	K-1920 X7, CCGW09T308	Vc=110m/min ap=0.08mm f=0.05mm/r
Brake disc	Braking surfaces	HT250	HB170-210	S-5020, CNGA120408	Vc=500m/min ap=0.5mm f=0.1mm/r
Gear	Inner hole	20CrMo	HRC58-62	S-7220, CNGA120408	Vc=158m/min ap=0.15mm f=0.08mm/r

Application case of WORLD CUTTERS innovative PCBN insert in auto parts

Workpiece name	Workpiece material	Workpiece hardness	Machining position	Machining type	Insert grade	Insert specification	Cutting type	Cutting parameters
Brake disc	HT250	HB190–210	Brake surface	Continuous, rough machining	N-1526	CNMN120712	Dry cutting	Vc=800m/min ap=2–3mm f=0.45mm/r
Brake disc	HT250	HB190–210	Brake surface	Continuous, finishing	N-1526	SCGN090408FC	Dry cutting	Vc=600m/min ap=0.25mm f=0.3mm/r
Brake drum	HT250	HB190–210	Outer circle, inner diameter	Continuous, rough machining	N-1526	CNMN120716	Wet cutting	Vc=1130m/min ap=2–3mm f=0.5mm/r
Belt pulley	Gray cast iron	HB220	Outer circle, end face	Continuous finishing	K-1502X7	DNGA150408	Wet cutting	Vc=427m/min ap=0.2mm f=0.1mm/r
Cylinder liner	Alloy cast iron	HB230–260	Inner hole	Continuous finishing	K-1500	CCGW09T304	Wet cutting	Vc=300m/min ap=0.6mm f=0.25mm/r
CV joint	S55C (No. 55 steel)	HRC58–62	Outer circle	Finishing	K-1501	TNGA160416	Dry cutting	Vc=180m/min ap=0.2mm f=0.08mm/r
Flywheel	HT250	HB190	Plane and inner diameter	Finishing	N-1526	RCMX090700Y	Dry cutting	Vc=247m/min ap=0.5mm f=0.2mm/r
Turbocharger	Alloy cast iron	HRC55–60	Inner hole	Finishing	K-1502X7	VCGW160404	Dry cutting	Vc=120m/min ap=0.2mm f=0.1mm/r

Application case of WORLD CUTTERS innovative PCBN insert in roll								
Workpiece name	Workpiece material	Workpiece hardness	Machining position	Machining type	Insert grade	Insert specification	Cutting type	Cutting parameters
Strip roll	High NiCr	HSD75–85	Shoulder, roll body	Rough machining	N-7000	RNMN201000	Dry cutting	Vc=40m/min ap=10mm f=0.5mm/r
H-shaped steel roll	High carbon semi-steel	HSD55–65	Roll body, end face	Rough machining	N-7000	RNMN201000	Dry cutting	Vc=94m/min ap=10mm f=0.4mm/r
Screw thread steel roll	High speed steel	HSD80–85	Outer circle of roll body, groove	Rough machining	N-1526	RCMX120700Y	Dry cutting	Vc=72m/min ap=2mm f=0.4mm/r
Screw thread steel roll	High speed steel	HSD80–85	Outer circle of roll body, groove	Finishing	N-1526	RCMX090700Y	Dry cutting	Vc=103m/min ap=0.3mm f=0.2mm/r

Application case of WORLD CUTTERS innovative PCBN insert in gear								
Workpiece name	Workpiece material	Workpiece hardness	Machining position	Machining type	Insert grade	Insert specification	Cutting type	Cutting parameters
Driven gear	20CrMnTiH	HRC58–62	End face, outer circle	Continuous, finishing	K-1006X6	CNGA120408	Dry cutting	Vc=140m/min ap=0.07mm f=0.08mm/r
Gear	20CrMnTi	HRC58–65	Spherical end face	Continuous, finishing	K-1006X6	TNGA160408	Dry cutting	Vc=200m/min ap=0.15mm f=0.08mm/r
Rear axle gear	20CrMnTiH	HRC58–62	Outer circle, end face	Finishing	K-1006X6	CNGA120412	Dry cutting	Vc=160m/min ap=0.15mm f=0.12mm/r
Gear ring	SCM420H	HRC45–48	Inner end face	Finishing	K-1006X6	CNGA120412	Dry cutting	Vc=140m/min ap=0.13mm f=0.12mm/r

Application case of WORLD CUTTERS innovative PCBN insert in air conditioning compressor

Workpiece name	Workpiece material	Workpiece hardness	Machining position	Machining type	Insert grade	Insert specification	Cutting type	Cutting parameters
Air cylinder	HT250	HB190–210	End face, outer circle	Rough machining	N-1526	SNGN120712	Dry cutting	Vc=760m/min ap=1mm f=0.4mm/r
Upper bearing	HT250	HB190–210	Outer circle of shank, end face	Finishing	N-1526	DNGA150408	Dry cutting	Vc=450m/min ap=0.3–0.5mm f=0.3mm/r
Lower bearing	HT250	HB190–210	Outer circle, end face	Rough machining	N-1526	WGNA080412	Dry cutting	Vc=510m/min ap=0.8–1mm f=0.4mm/r
Flange	Gray cast iron	HB220	Outer circle, end face	Continuous finishing	N-1526	WGNA080408	Dry cutting	Vc=534m/min ap=0.4mm f=0.26mm/r

Application case of WORLD CUTTERS innovative PCBN insert in gear shaft								
Workpiece name	Workpiece material	Workpiece hardness	Machining position	Machining type	Insert grade	Insert specification	Cutting type	Cutting parameters
Driven belt pulley shaft	20CrMnTiH	HRC58–62	Outer circle	Semi-finishing	K-1006X6	CNGA120412	Dry cutting	Vc=140m/min ap=0.15mm f=0.25mm/r
Intermediate shaft	20CrMnTiH	HRC58–62	Cylindrical surface at both ends	Continuous, finishing	K-1904X6	DNGA150408	Dry cutting	Vc=180m/min ap=0.25mm f=0.08mm/r
Transmission shaft	20CrMo	HRC58–65	Cylindrical surface at both ends	Light intermittent, finishing	K-1006X6	VNGA160408	Wet cutting	Vc=180m/min ap=0.1mm f=0.15mm/r
Wheel hub bearing	65Mn	HRC58–63	Raceway	Continuous, finishing	K-1880X6	VNGA160408	Dry cutting	Vc=185m/min ap=0.15mm f=0.1mm/r

Application case of WORLD CUTTERS innovative PCBN insert in other industries

Workpiece name	Workpiece material	Workpiece hardness	Machining position	Machining type	Insert grade	Insert specification	Cutting type	Cutting parameters
Slewing ring	42CrMo	HRC47–55	Raceway	Intermittent, finishing	N-1900	RCMX090700	Dry cutting	Vc=90m/min ap=0.3mm f=0.3mm/r
Gear	42CrMo	HRC45–55	Gear tip circle	Heavy intermittent, rough machining	N-1900	SNMN150716	Dry cutting	Vc=97m/min ap=4mm f=0.7mm/r
Rolling mortar wall	High manganese steel	HB240	Inner conical surface	Continuous, rough machining	N-7000	SNMN150716	Dry cutting	Vc=60m/min ap=6mm f=0.4mm/r
Engine cylinder block	HT250	HB190–210	Top face of cylinder block	Intermittent, finishing	N-1526	SNEN090412	Dry cutting	Vc=470m/min ap=0.5mm f=2000mm/r
Piston rod	20Cr2Ni4A	HRC58–60	Outer circle	Continuous, finishing	N-1900	RNGN090400	Dry cutting	Vc=120m/min ap=0.4–0.5mm f=0.25mm/r
Planet carrier	Powder metallurgy	HB190–210	Inner hole	Finishing	K-1500	VCGW160404	Dry cutting	Vc=200m/min ap=0.2mm f=0.15mm/r
Combined gear of gearbox	16MnCr5	HRC58–62	Inner hole, end face	Continuous, finishing	K-1905X6	VBGW160404	Dry cutting	Vc=160m/min ap=0.1mm f=0.01mm/r
Impeller	Wear resistant white cast iron	HRC50	N/A	Heavy intermittent, rough machining	N-7000	SNGN120712	Dry cutting	Vc=55m/min ap=2–3mm f=0.3mm/r

Custom Production Solutions for Your Needs
At World Cutters, we go beyond standard production to offer tailored solutions that best meet our customers' needs. Recognizing the unique requirements of each client, we provide custom design and manufacturing services that cater specifically to your demands. Whether you need precise cutting quality or high-precision machining, our expert team develops and produces the products best suited to your needs.

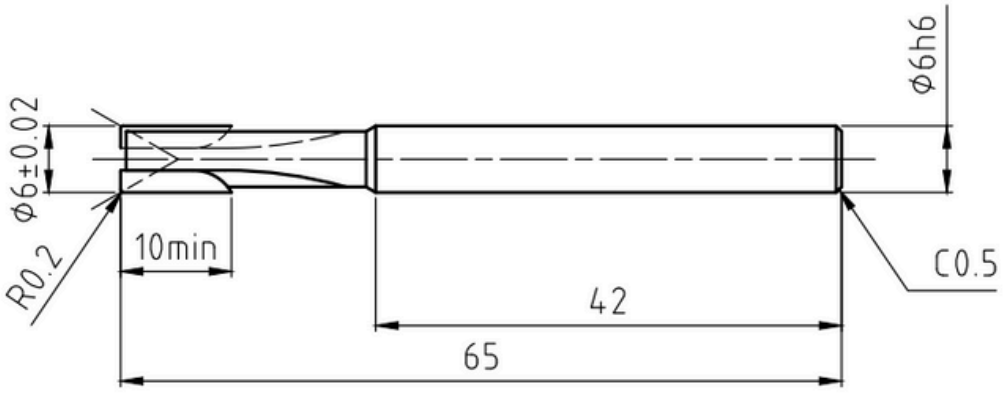
Customer-Focused Approach
We listen to you at every step, working together to determine the most suitable solutions for your requirements. From design to production, our flexible and innovative approach ensures tailored solutions that deliver maximum efficiency and performance.

High Efficiency and Performance with Custom Production
- Custom-designed products
- High-precision cutting tools
- Materials and coatings tailored to your production processes
- Rapid prototyping and testing

We are pleased to offer custom solutions to help you optimize your production processes and achieve the best performance. Contact us today to boost your production power!

Common cutting parameter for Ø6 PCD Milling Cutter

Workpiece name	2 Flute		3 Flute		4 Flute	
Carbon fiber	250-300 m/min. (14,000-17,000 RPM)	1200-1500 mm/min.	250-300 m/min. (14,000-17,000 RPM)	1200-1500 mm/min.	300-350 m/min. (15,000-18,000 RPM)	1500-2000 mm/min.
Carbon fiber	340-350 m/min. (18,000-18-500 RPM)	1800-2000 mm/min.	350-360 m/min. (18,500-19,000 RPM)	1900-2100 mm/min.	350-370 m/min. (18,500-19,600 RPM)	2000-2200 mm/min.
Carbon fiber	380-400 m/min (20,207-21,238 RPM)	2000-2500 mm/min.	400-420 m/min. (21,238-22,269 RPM)	2200-2700 mm/min.	420-450 m/min. (22,269-23,873 RPM)	2500-3000 mm/min.



Common cutting parameter for WorldCutters Milling Inserts

Workpiece	Hardness of workpiece	Cutting edge angle Kr	Cutting speed Vc (m/min)	Cutting depth ap (mm)	Feed rate (mm/rev)	Cutting fluid
Gray cast iron	200HB	75°	500-2000	0,5-5,0	0,1-0,2	Dry cut
Gray cast iron	55HRC	75°	150-300	0,5-2,0	0,05-0,2	Dry cut
Hardened steel	60HRC	75°	80-200	0,2-0,5	0,05-0,1	Dry cut

PCD Milling Cutter - Superior Cutting Performance and Long-lasting Use

PCD (Polycrystalline Diamond) milling cutters are ideal for applications requiring high precision and durability. They offer exceptional cutting performance and extended tool life, making them perfect for machining abrasive materials such as carbon fiber, composites, aluminum, copper, and other non-ferrous metals.

Advantages:

- **High Wear Resistance:** PCD milling cutters provide 50 to 100 times longer tool life compared to conventional cutting tools, especially when working with abrasive materials.
- **Excellent Surface Quality:** The low friction coefficient and high hardness of PCD ensure a smooth surface finish during machining, reducing the need for post-processing.
- **Low Cutting Forces:** PCD cutters operate with low cutting forces, contributing to energy savings and reducing the load on the machine.
- **High Cutting Speeds:** These cutters perform stably even at high cutting speeds, enhancing production rates and increasing efficiency.

Applications:

- **Aerospace and Automotive:** Ideal for machining lightweight and durable materials like carbon fiber and aluminum.
- **Electronics and Medical Devices:** Used in the production of components requiring precise machining.
- **Composite Materials:** Perfect for processing hard and abrasive composites, especially where superior surface finish is required.

Technical Details and Cutting Parameters:

- **Cutting Speed:** PCD milling cutters can operate between 340 m/min (18,038 RPM) and 450 m/min (23,873 RPM). Higher speeds facilitate faster cuts and smoother surfaces.
- **Feed Rate:** A recommended range of 1500 - 3000 mm/min optimizes machining speed and efficiency.
- **Depth of Cut:** For roughing, use a depth of 2 - 3.5 mm, and for finishing, a depth of 0.5 - 1.5 mm is suitable.

Maintenance and Wear Monitoring: PCD cutters should be regularly inspected visually and by assessing surface quality. Signs of wear can lead to performance degradation, so timely tool replacement is essential. To prevent overheating, adjust cutting speeds and feed rates appropriately.

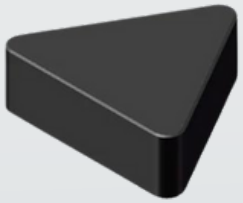
Example Applications: According to the examples, using a 6 mm diameter, 2-edged PCD milling cutter at 250 m/min cutting speed and 1000 mm/min feed rate is recommended for trimming carbon fiber edges and achieving a smooth surface. This approach enhances surface quality and extends tool life.

CBN Insert Series

Solid CBN

SERIES N

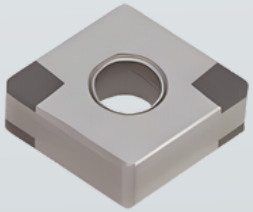
-Integral polycrystalline structure for better machining safety and impact resistance
-Both cutting edges can be used, reducing the problem of wasted unused tips.
-Mainly used for roughing with large depth of cut, but also for semi-finishing and finishing.



Brazed solid tip CBN

SERIES S

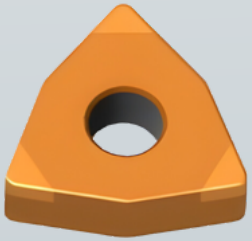
-Available with straight or countersunk holes for easy mounting on standard toolholders
-More cutting edges
-Mainly for semi-finishing, but also for finishing



Brazed finishing CBN

SERIES K

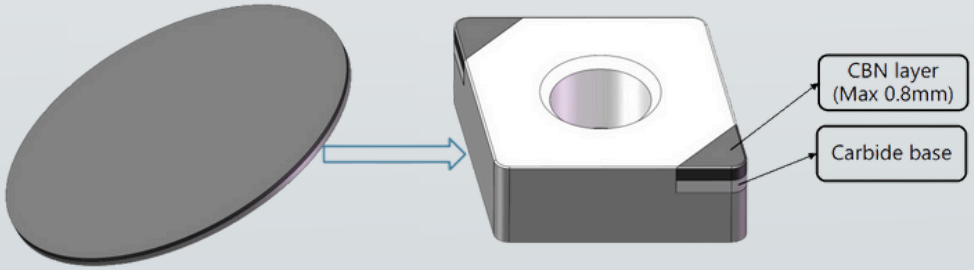
-For higher precision, longer life cutting
-Diversification of tool forms and customisation of non-standard edge lengths
-Mainly for finishing



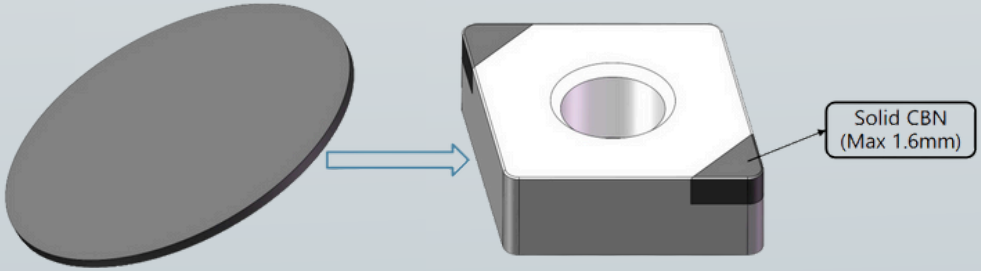
Focusing on revolutionary technological innovation on CBN micro-nano materials, composites and cutting tool application, and advanced controlling and manufacturing process, WORLD Cutters is able to develop and manufacture the most consistent high-quality PCBN solid inserts with high impact resistance, more economical double-layer inserts, super finishing single-layer inserts and inserts with cutting-edge coating techniques. It fully meets the requirements of wear resistance, impact resistance, thermal stability and chemical stability of metal machining.

Our PCBN inserts are widely used in processing pearlitic cast iron, high chromium and nickel alloy cast iron, hardened steel, powder metal, hard alloy and super alloy. In the mechanical machining application of the traditional system, not only has it greatly reduced the comprehensive production cost, but also significantly improved the production capacity and efficiency during the whole production operation, and the equipment investment is greatly decreased at the same time.

Conventional K insert

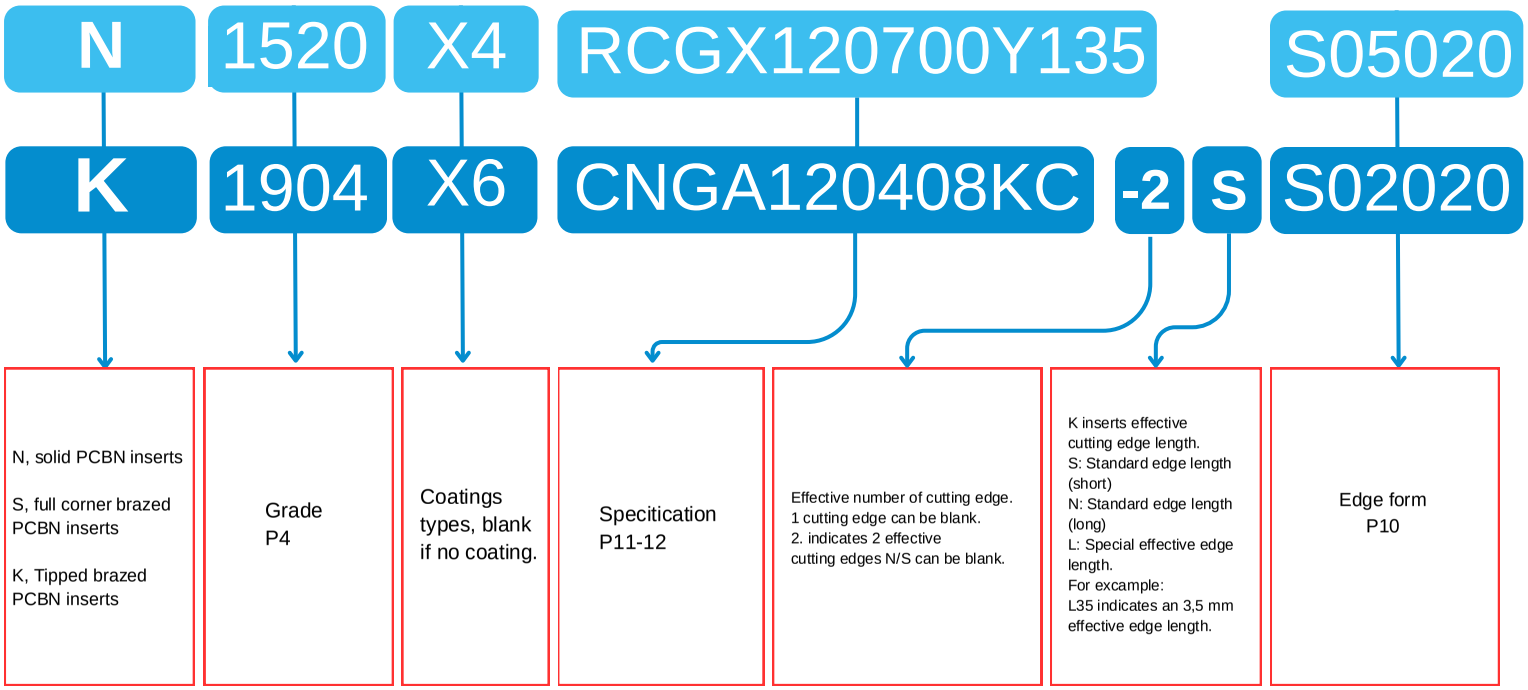


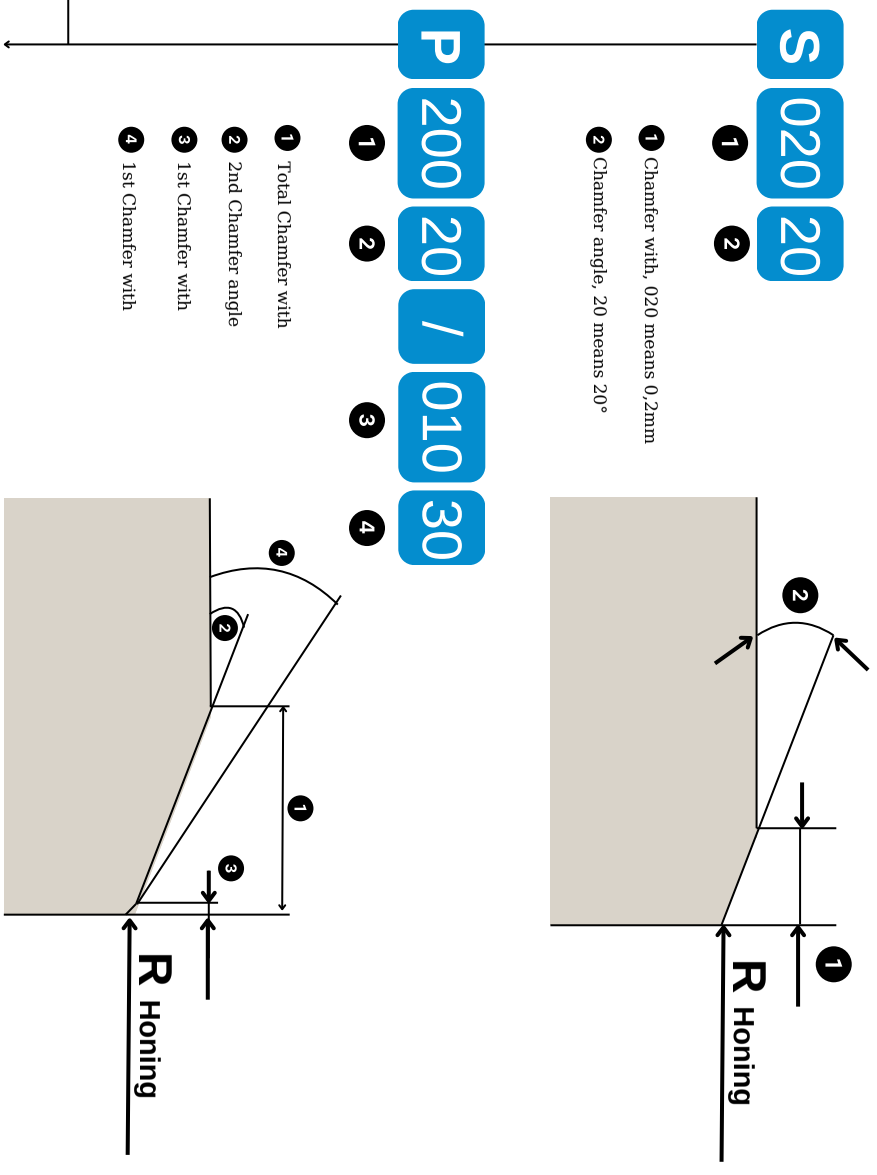
Reinforced K insert (High impact toughness



WORLDCutters
We Shape Tomorrow's Precision

NAMING STANDARD OF WORLD CUTTERS PCBN INSERTS CUTTING EDGE





Code	Cutting Edge Preparation	Drawing	Description
F	Sharp Edge		Sharp edges can help improve surface roughness and are less likely to cause vibration marks. Overly sharp edges may result in reduced wear durability, so sharp edges are typically used for machining general cast iron that requires high roughness.
E	Honing		Honing can reduce micro chipping, improve the integrity of the cutting edge, and increase tool life. Heavier honing enhances edge shape and strength but also increases cutting resistance and heat. Heavy honing is suitable under conditions with sufficient system rigidity and for interrupted cutting.
T	Chamfer		Chamfering improves the impact resistance of the cutting edge. Compared to S edge preparation, it enhances surface quality and ensures dimensional stability.
S	Chamfer + Honing		This preparation provides the best cutting edge strength and overall performance. It is widely used in CBN inserts. S05020 is often used in turning alloy hard cast iron; S02020 is used in gray cast iron; S01020 is used in hardened steel.
K	Double Chamfer		Recommended for large machining allowance with interrupted turning to enhance impact resistance.
P	Double Chamfer + Honing		Recommended for large machining allowance with interrupted turning to provide better impact resistance and strength compared to the K edge.

WORLD CUTTERS inserts model naming standard

Shape Code	Insert	Shape	Angle
S	□	Square	90°
T	△	Regular Triangle	60°
C	◇	Rhombus	80°
D			55°
E			75°
M			86°
V			35°
W	⬠	Convex Triangle	80°
H	⬡	Regular Hexagon	120°
O	O	Regular Octagon	135°
P	⬟	Regular Pentagon	108°
L	▭	Rectangle	90°
A	▱	Parallelogram	85°
B			82°
N/K			55°
R	O	Round	-

SHAPE

For even edge | For odd edge | Insert with wiper

Code	Tip Height m (mm)	Φ I.C (mm)	Thickness S (mm)	Code	Tip Height m (mm)	Φ I.C (mm)	Thickness S (mm)
A	±0.005	±0.025	±0.025	J	±0.005	±0.05	±0.025
F	±0.005	±0.025	±0.025	K	±0.013	±0.05	±0.025
C	±0.008	±0.025	±0.025	L	±0.025	±0.05	±0.025
H	±0.013	±0.05	±0.025	M	±0.008	±0.13	±0.025
E	±0.025	±0.05	±0.025	N	±0.013	±0.13	±0.025
G	±0.05	±0.05	±0.025	U	±0.013	±0.25	±0.13

TOLERANCE

Inscribed Circle (mm)	C	D	S	T	V	W	R
3.97				06			03
4.76				08			04
5.0							05
5.56				09	09		05
6.0							06
6.35	06	07	06	11	11	04	06
7.94	08	09					07
8.0							08
9.525	09	11	09	16	16	06	09
10.0							10
12.0							12
12.7	12	15	12	22	22	08	12
15.875	16		15	27			15
16.0		19					16
19.05	19		19	33			19
20.0							20
25.0	25	25					25
25.4			25				25
31.75							31
32.0							32

INSERT SIZE (mm)

Note: Thickness refers to the height between the insert's bottom and the highest part of the cutting edge.

Code	Thickness (mm)	Code	Thickness (mm)
01	1.59	06	6.35
T1	1.98	07	7.94
02	2.38	08	8.0
T2	2.58	09	9.52
03	3.18	10	10.0
T3	3.97	11	11.1
04	4.76	12	12.0
05	5.56	12	12.7

THICKNESS (mm)

Code	Radius (mm)
00	Sharp or round insert
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
X	Other

RADIUS CODE

R	C	G	X	12	07	00	Y135
C	N	G	A	12	04	08	KC

Clearance Angle

Code	Clearance Angle
N	0°
A	3°
B	5°
C	7°
P	11°
D	15°
E	20°
F	25°
G	30°
O	Other clearance angle

Chip Breaker and Fixing Form

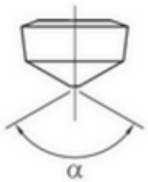
Code	About Hole	Chip Breaker	Sketch	Code	About Hole	Chip Breaker	Sketch
N	No	No		B	70°–90° counter bore on single side	No	
R		Single side chip breaker		H		Single side chip breaker	
F		Double side chip breaker		C	70°–90° counter bore on both sides	No	
A	Round straight hole	No		J		Double side chip breaker	
M		Single side chip breaker		O	Fastening dimple	Round	
G		Double side chip breaker					
W	40°–60° counter bore on single side	No		S		Square	
T		Single side chip breaker					
Q	40°–60° counter bore on both sides	No		L		Long Strip	
U		Double side chip breaker					
				X	Other fixed and chip breaker styles require drawing or more information		

Any Marks

Main cutting edge style, cutting direction, or chip breaker type. Blank means no other marks.

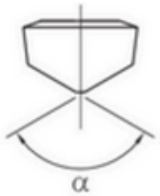
Cone or Pyramid Bottom

Y: Cone Bottom



- **Description**: Y indicates a cone bottom. For example, 135 refers to a cone angle of 135°.
- **Standard Angle:** If the cone angle is 120°, it can be left blank.
- **Example:** For a 120° cone bottom insert, the model can be RCMX120700Y or RCMX120700Y120.
- **Non-Standard Angle:** If the cone bottom angle is not 120°, it must be clearly marked.
- **Example**: For a 135° cone bottom insert, the model is RCMX120700Y135.

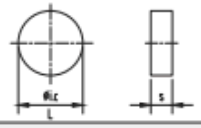
V: Pyramid Bottom



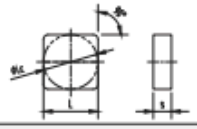
- **Description:** V indicates a pyramid bottom. For example, 135 refers to a pyramid angle of 135°.
- **Standard Angle:** If the pyramid angle is 120°, it can be left blank.
- **Example:** For a 120° pyramid bottom insert, the model can be RCMX120700V or RCMX120700V120.
- **Non-Standard Angle:** If the pyramid bottom angle is not 120°, it must be clearly marked.
- **Example:** For a 135° pyramid bottom insert, the model is RCMX120700V135.

Remarks: If the model shows no V or Y, for example, RCMX120700, it indicates a V bottom.

N Series Solid Inserts



Model	Dimension(mm)				Standard cutting edge	Grade					
ISO	L	Φ i.c	s	r		N0500	N0600	N1000	N0200	N1600	N1630
RNMN 060400	6	6.35	4.76	0	S02020 S05020 S10020	●	●	●	●	●	●
RNMN 090300	9	9. 525	3. 18	0		●	●	●	●	●	●
RNMN 090400	9	9.525	4.76	0		●	●	●	●	●	●
RNMN 120400	12	12.7	4.76	0		●	●	●	●	●	●
RNMN 120600	12	12.7	6.35	0		●	●	●	●	●	●
RNMN 120700	12	12.7	7.94	0		●	●	●	●	●	●
RNMN 150700	15	15.875	7.94	0		●	●		●	●	●
RNMN 160700	16	16	7.94	0		●	●		●	●	●
RNMN 190700	19	19.05	7.94	0		●	●		●	●	●
RNMN 200700	20	20	7.94	0		●	●		●	●	●
RNMN 201000	20	20	10	0		●	●		●	●	●
RNMN 250600	25	25.4	6.35	0		●			●	●	●
RNMN 250700	25	25.4	7.94	0		●			●	●	●
RNMN 251000	25	25.4	10	0		●			●	●	●
RNMN 251200	25	25.4	12	0		●			●	●	●

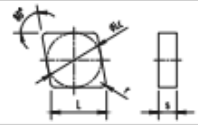


Model	Dimension(mm)				Standard cutting edge	Grade					
ISO	L	Φ i.c	s	r		N0500	N0600	N1000	N0200	N1600	N1630
SNMN 090304	9	9.525	3.18	0.4	S02020 S05020 S10020	●	●	●	●	●	●
SNMN 090308	9	9.525	3.18	0.8		●	●	●	●	●	●
SNMN 090312	9	9.525	3.18	1.2		●	●	●	●	●	●
SNMN 090404	9	9.525	4.76	0.4		●	●	●	●	●	●
SNMN 090408	9	9.525	4.76	0.8		●	●	●	●	●	●
SNMN 090412	9	9.525	4.76	1.2		●	●	●	●	●	●
SNMN 120404	12	12.7	4.76	0.4		●	●	●	●	●	●
SNMN 120408	12	12.7	4.76	0.8		●	●	●	●	●	●
SNMN 120712	12	12.7	7.94	1.2		●	●	●	●	●	●
SNMN 150704	15	15.875	7.94	0.4		●	●		●	●	●
SNMN 150708	15	15.875	7.94	0.8		●	●		●	●	●
SNMN 201020	20	20	10	2.0		●	●		●	●	●
SNMN 201024	20	20	10	2.4		●	●		●	●	●

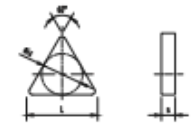
Remarks:

- Products available.
- Customized cutting edge is available.

N Series Solid Inserts

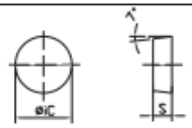


Model	Dimension(mm)				Standard cutting edge	Grade					
ISO	L	Φ i.c	s	r		N0500	N0600	N1000	N0200	N1600	N1630
CNMN 090404	9	9.525	4.76	0.4	S02020	●		●	●	●	●
CNMN 090408	9	9.525	4.76	0.8		●	●	●	●	●	●
CNMN 090412	9	9.525	4.76	1.2		●	●	●	●	●	●
CNMN 120404	12	12.7	4.76	0.4		●	●	●	●	●	●
CNMN 120408	12	12.7	4.76	0.8		●	●	●	●	●	●
CNMN 120412	12	12.7	4.76	1.2		●	●	●	●	●	●
CNMN 120704	12	12.7	7.94	0.4		●	●	●	●	●	●
CNMN 120708	12	12.7	7.94	0.8		●	●	●	●	●	●
CNMN 120712	12	12.7	7.94	1.2		●		●	●	●	●
CNMN 160708	16	15.875	7.94	0.8		●		●	●	●	●
CNMN 160712	16	15.875	7.94	1.2		●		●	●	●	●
CNMN 160716	16	15.875	7.94	1.6		●		●	●	●	●

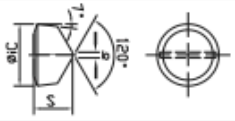


Model	Dimension(mm)				Standard cutting edge	Grade					
ISO	L	Φ i.c	s	r		N0500	N0600	N1000	N0200	N1600	N1630
TNGN110304	11	6.35	3.18	0.4	S01020 S02020	●	●	●	●	●	●
TNGN110308	11	6.35	3.18	0.8		●	●	●	●	●	●
TNGN110312	11	6.35	3.18	1.2		●	●	●	●	●	●
TNGN160404	16	9.25	4.76	0.4		●	●		●	●	●
TNGN160408	16	9.25	4.76	0.8		●	●		●	●	●
TNGN160412	16	9.25	4.76	1.2		●	●		●	●	●

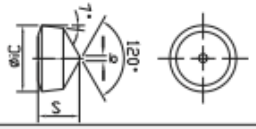
N Series Solid Inserts



Model	Dimension(mm)				Standard cutting edge	Grade					
ISO	L	Φ i.c	s	r		N0500	N0600	N1000	N0200	N1600	N1630
RCMN 060400	6	6.35	4.76	0	S02020 S05020 S10020	●	●	●	●	●	●
RCMN 090400	9	9.525	4.76	0		●	●	●	●	●	●
RCMN 090600	9	9.525	6.35	0		●	●	●	●	●	●
RCMN 120600	12	12.7	6.35	0		●	●	●	●	●	●
RCMN 120700	12	12.7	7.94	0		●	●	●	●	●	●
RCMN 150700	15	15.875	7.94	0		●	●		●	●	●
RCMN 190700	19	19.05	7.94	0		●	●		●	●	●

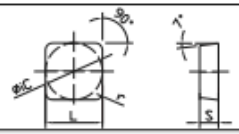


Model	Dimension(mm)				Standard cutting edge	Grade					
ISO	L	Φ i.c	s	b		N0500	N0600	N1000	N0200	N1600	N1630
RCMX 060400V	6	6.35	4.76	0.8	S02020 S05020 S10020 S20020	●	●	●	●	●	●
RCMX 060600V	6	6.35	6.35	0.8		●	●	●	●	●	●
RCMX 090700V	9	9.525	7.94	1		●	●	●	●	●	●
RCMX 120700V	12	12.7	7.94	2		●	●	●	●	●	●
RCMX 151000V	15	15.875	10.0	2		●	●		●	●	●
RCMX 191000V	19	19.05	10.0	2		●	●		●	●	●
RCMX 201200V	20	20.0	12.0	2		●	●		●	●	●
RCMX 251200V	25	25.4	12.0	2		●	●		●	●	●

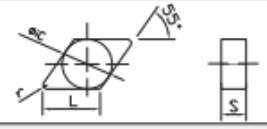


Model	Dimension(mm)				Standard cutting edge	Grade					
ISO	L	Φ i.c	s	b		N0500	N0600	N1000	N0200	N1600	N1630
RCMX060400Y	6	6.35	4.76	0.6	S02020 S05020 S10020 S20020	●	●	●	●	●	●
RCMX060500Y	6	6.35	5.0	0.6		●	●	●	●	●	●
RCMX060700Y	6	6.35	7.94	0.6		●	●	●	●	●	●
RCMX090700Y	9	9.525	7.94	1		●	●	●	●	●	●
RCMX120700Y	12	12.7	7.94	1.2		●	●	●	●	●	●

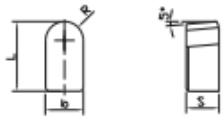
N Series Solid Inserts



Model	Dimension(mm)				Standard cutting edge	Grade					
ISO	L	Φ i.c	s	r		N0500	N0600	N1000	N0200	N1600	N1630
SCGN 090304	9	9.525	3.18	0.4	T01020 S01020 S02020		●	●	●		
SCGN 090308	9	9.525	3.18	0.8			●	●	●		
SCGN 090312	9	9.525	3.18	1.2			●	●	●		
SCGN 090404	9	9.525	4.76	0.4			●	●	●		
SCGN 090408	9	9.525	4.76	0.8			●	●	●		
SCGN 090412	9	9.525	4.76	1.2			●	●	●		



Model	Dimension(mm)				Standard cutting edge	Grade					
ISO	L	Φ i.c	s	r		N0500	N0600	N1000	N0200	N1600	N1630
DNUN110404	11	9.525	4.76	0.4	S01020 S02020				●		
DNUN110408	11	9.525	4.76	0.8					●		
DNUN110412	11	9.525	4.76	1.2					●		
DNUN110604	11	9.525	6.35	0.4					●		
DNUN110608	11	9.525	6.35	0.8					●		
DNUN110612	11	9.525	6.35	1.2					●		



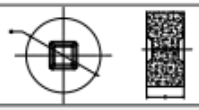
Model	Dimension(mm)				Standard cutting edge	Grade					
ISO	R	b	L	S		N0500	N0600	N1000	N0200	N1600	N1630
STB10K1	4.6	9.2	17	8.0	S10020	●	●			●	
BL12K1-B	5.55	11.1	17	8.0		●	●			●	
BL14K1-B	6.5	13.0	17	8.0		●	●			●	

Remarks:

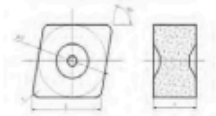
- Products available.
- Customized cutting edge is available.

N Series Solid Inserts

Model	Dimension(mm)				Standard cutting edge	Grade					
ISO	L	Φ i.c	s	r		N0500	N0600	N1000	N0200	N1600	N1630
WNMN 080404	8	12.7	4.76	0.4	S02020	●	●	●	●	●	●
WNMN 080408	8	12.7	4.76	0.8		●	●	●	●	●	●
WNMN 080412	8	12.7	4.76	1.2		●	●	●	●	●	●
WNMN 080604	8	12.7	6.35	0.4		●	●	●	●	●	●
WNMN 080608	8	12.7	6.35	0.8		●	●	●	●	●	●
WNMN 080612	8	12.7	6.35	1.2		●	●	●	●	●	●

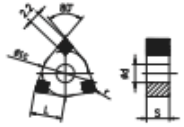


Model	Dimension(mm)			Standard cutting edge	Grade					
ISO	L	Φ i.c	s		N0500	N0600	N1000	N0200	N1600	N1630
RNMS090600	9	9.525	6.35	S02020	●	●	●	●	●	●
RNMS120700	12	12.7	7.94		●	●	●	●	●	●
RNMS150700	15	15.875	7.94		●	●	●	●	●	●
RNMS201000	20	20	10		●	●	●	●	●	●

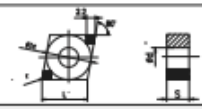


Model	Dimension(mm)				Standard cutting edge	Grade					
ISO	L	Φ i.c	s	r		N0500	N0600	N1000	N0200	N1600	N1630
CNMG120704	12	12.7	7.94	0.4	S02020		●	●	●	●	●
CNMG120708	12	12.7	7.94	0.8			●	●	●	●	●
CNMG120712	12	12.7	7.94	1.2			●	●	●	●	●

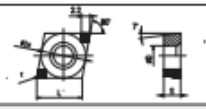
S Series Full Corner Brazed Inserts



Model	Dimension(mm)					Standard cutting edge	Grade		
ISO	L	Φ i.c	s	Φd	r		S1000	S0200	S1630
RNGA080404	8	12.7	4.76	5.16	0.4	S01020 S02020	●	●	●
RNGA080408	8	12.7	4.76	5.16	0.8		●	●	●
RNGA080412	8	12.7	4.76	5.16	1.2		●	●	●



Model	Dimension(mm)					Standard cutting edge	Grade		
ISO	L	Φ i.c	s	Φd	r		S1000	S0200	S1630
CNGA120404	12	12.7	4.76	5.16	0.4	S01020 S02020	●	●	●
CNGA120408	12	12.7	4.76	5.16	0.8		●	●	●
CNGA120412	12	12.7	4.76	5.16	1.2		●	●	●
CNGA160404	16	15.875	4.76	5.16	0.4		●	●	●
CNGA160408	16	15.875	4.76	5.16	0.8		●	●	●
CNGA160412	16	15.875	4.76	5.16	1.2		●	●	●

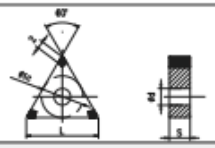


Model	Dimension(mm)					Standard cutting edge	Grade		
ISO	L	Φ i.c	s	Φd	r		S1000	S0200	S1630
CCGW09T304	9	9.525	3.97	4.4	0.4	S01020 S02020	●	●	●
CCGW09T308	9	9.525	3.97	4.4	0.8		●	●	●
CCGW09T312	9	9.525	3.97	4.4	1.2		●	●	●
CCGW120404	12	12.7	4.76	5.5	0.4		●	●	●
CCGW120408	12	12.7	4.76	5.5	0.8		●	●	●
CCGW120412	12	12.7	4.76	5.5	1.2		●	●	●

Remarks:

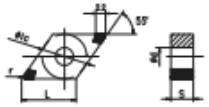
- Products available.
- Customized cutting edge is available.

S Series Full Corner Brazed Inserts



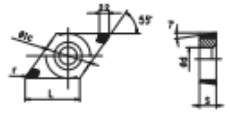
Model	Dimension(mm)					Standard cutting edge	Grade		
ISO	L	Φ i.c	s	Φ d	r		S1000	S0200	S1630
TNGA160404	16	9.525	4.76	3.81	0.4	S01020 S02020	●	●	●
TNGA160408	16	9.525	4.76	3.81	0.8		●	●	●
TNGA160412	16	9.525	4.76	3.81	1.2		●	●	●

Model	Dimension(mm)					Standard cutting edge	Grade		
ISO	L	Φ i.c	s	Φ d	r		S1000	S0200	S1630
TCGN110304	11	6.35	3.18	2.8	0.4	S01020 S02020	●	●	●
TCGN110308	11	6.35	3.18	2.8	0.8		●	●	●
TCGN110312	11	6.35	3.18	2.8	1.2		●	●	●

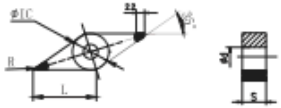


Model	Dimension(mm)					Standard cutting edge	Grade		
ISO	L	Φ i.c	s	Φ d	r		S1000	S0200	S1630
DNGA110404	11	9.525	4.76	3.81	0.4	S01020 S02020	●	●	●
DNGA110408	11	9.525	4.76	3.81	0.8		●	●	●
DNGA110412	11	9.525	4.76	3.81	1.2		●	●	●
DNGA150404	15	12.7	4.76	5.16	0.4		●	●	●
DNGA150408	15	12.7	4.76	5.16	0.8		●	●	●
DNGA150412	15	12.7	4.76	5.16	1.2		●	●	●

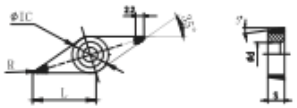
S Series Full Corner Brazed Inserts



Model	Dimension(mm)					Standard cutting edge	Grade		
ISO	L	Φ i.c	s	Φ d	r		S1000	S0200	S1630
DCGW11T304	11	9.525	3.97	4.4	0.4	S01020 S02020	●	●	●
DCGW11T308	11	9.525	3.97	4.4	0.8		●	●	●
DCGW11T312	11	9.525	3.97	4.4	1.2		●	●	●



Model	Dimension(mm)					Standard cutting edge	Grade		
ISO	L	Φ i.c	s	Φ d	r		S1000	S0200	S1630
VNGA160404	16	9.525	4.76	3.81	0.4	S01020 S02020	●	●	●
VNGA160408	16	9.525	4.76	3.81	0.8		●	●	●
VNGA160412	16	9.525	4.76	3.81	1.2		●	●	●

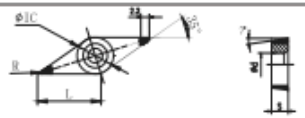


Model	Dimension(mm)					Standard cutting edge	Grade		
ISO	L	Φ i.c	s	Φ d	r		S1000	S0200	S1630
VBGM160404	16	9.525	4.76	4.4	0.4	S01020 S02020	●	●	●
VBGM160408	16	9.525	4.76	4.4	0.8		●	●	●
VBGM160412	16	9.525	4.76	4.4	1.2		●	●	●

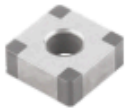
Remarks:

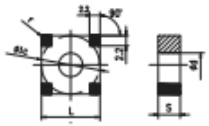
- Products available.
- Customized cutting edge is available.

S Series Full Corner Brazed Inserts



Model	Dimension(mm)					Standard cutting edge	Grade		
ISO	L	Φ i.c	s	Φ d	r		S1000	S0200	S1630
VCGW160404	16	9.525	4.76	4.4	0.4	S01020 S02020	●	●	●
VCGW160408	16	9.525	4.76	4.4	0.8		●	●	●
VCGW160412	16	9.525	4.76	4.4	1.2		●	●	●



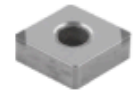


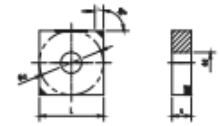
Model	Dimension(mm)					Standard cutting edge	Grade		
ISO	L	Φ i.c	s	Φ d	r		S1000	S0200	S1630
SNGA120404	12	12.7	4.76	5.16	0.4	S01020 S02020	●	●	●
SNGA120408	12	12.7	4.76	5.16	0.8		●	●	●
SNGA120412	12	12.7	4.76	5.16	1.2		●	●	●

Remarks:

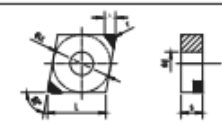
- Products available.
- Customized cutting edge is available.

K Series Super Finishing Tip Brazed Inserts

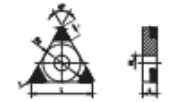




Model	Dimension(mm)							Standard cutting edge	Grade					
						b								
ISO	L	Φ i.c	s	Φ d	r	S	N		1501	1502	1503	1904	1905	1906
SNGA120404-2S	12	12.7	4.76	5.16	0.4	2.5	3.3	T01020 T02020 S01020 S02020	●	●	●	●	●	●
SNGA120408-2S	12	12.7	4.76	5.16	0.8	2.3	3.2		●	●	●	●	●	●
SNGA120412-2S	12	12.7	4.76	5.16	1.2	2.2	3.1		●	●	●	●	●	●



Model	Dimension(mm)							Standard cutting edge	Grade					
						b								
ISO	L	Φ i.c	s	Φ d	r	S	N		1501	1502	1503	1904	1905	1906
CNGA120404-2S	12	12.7	4.76	5.15	0.4	2.5	3.3	T01020 T02020 S01020 S02020	●	●	●	●	●	●
CNGA120408-2S	12	12.7	4.76	5.15	0.8	2.3	3.1		●	●	●	●	●	●
CNGA120412-2S	12	12.7	4.76	5.15	1.2	2.2	3.0		●	●	●	●	●	●

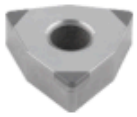


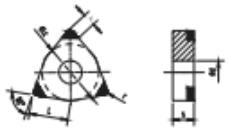
Model	Dimension(mm)							Standard cutting edge	Grade					
						b								
ISO	L	Φ i.c	s	Φ d	r	S	N		1501	1502	1503	1904	1905	1906
TNGA160404-3S	16	9.525	4.76	3.81	0.4	2.3	3.3	T01020 T02020 S01020 S02020	●	●	●	●	●	●
TNGA160408-3S	16	9.525	4.76	3.81	0.8	2	3.0		●	●	●	●	●	●
TNGA160412-3S	16	9.525	4.76	3.81	1.2	1.7	2.7		●	●	●	●	●	●
TNGA160416-3S	16	9.525	4.76	3.81	1.6		2.4		●	●	●	●	●	●

Remarks:

- The standard cutting length is A standard. Please specify in your order if B standard is required.
- Customized cutting edge is available.

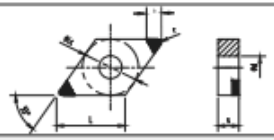
K Series Super Finishing Tip Brazed Inserts



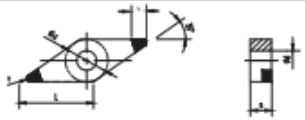


Model	Dimension(mm)							Standard cutting edge	Grade					
ISO	L	Φ i.c	s	Φ d	r	b A	b B		1501	1502	1503	1904	1905	1906
WNGA060404-3S	6	9.525	4.76	3.81	0.4	2.5	3.3	T01020	●	●	●	●	●	●
WNGA060408-3S	6	9.525	4.76	3.81	0.8	2.3	3.1	T02020	●	●	●	●	●	●
WNGA080404-3S	8	12.7	4.76	5.16	0.4	2.5	3.3	S01020	●	●	●	●	●	●
WNGA080408-3S	8	12.7	4.76	5.16	0.8	2.3	3.1	S02020	●	●	●	●	●	●
WNGA080412-3S	8	12.7	4.76	5.16	1.2	2.2	3.0		●	●	●	●	●	●

S0200 S1630



Model	Dimension(mm)							Standard cutting edge	Grade					
ISO	L	Φ i.c	s	Φ d	r	b A	b B		1501	1502	1503	1904	1905	1906
DNGA110404-2S	11	9.525	4.76	3.81	0.4	2.5	3.3	T01020	●	●	●	●	●	●
DNGA110408-2S	11	9.525	4.76	3.81	0.8	2.1	2.9	T02020	●	●	●	●	●	●
DNGA150404-2S	15	12.7	4.76	5.16	0.4	2.5	3.3	S01020	●	●	●	●	●	●
DNGA150408-2S	15	12.7	4.76	5.16	0.8	2.1	2.9	S02020	●	●	●	●	●	●
DNGA150412-2S	15	12.7	4.76	5.16	1.2	1.8	2.5		●	●	●	●	●	●

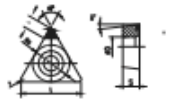


Model	Dimension(mm)							Standard cutting edge	Grade					
ISO	L	Φ i.c	s	Φ d	r	b A	b B		1501	1502	1503	1904	1905	1906
VNGA160404-2S	16	9.525	4.76	3.81	0.4	2.8	3.5	T01020	●	●	●	●	●	●
VNGA160408-2S	16	9.525	4.76	3.81	0.8	2	2.7	T02020	●	●	●	●	●	●
VNGA160412-2S	16	9.525	4.76	3.81	1.2	1.3	1.9	S01020	●	●	●	●	●	●
								S02020	●	●	●	●	●	●

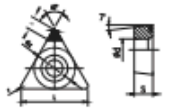
Remarks:

- **T**he standard cutting length is A standard. Please specify in your order if B standard is required.
- Customized cutting edge is available.

K Series Super Finishing Tip Brazed Inserts



Model	Dimension(mm)							Standard cutting edge	Grade					
ISO	L	Φ i.c	s	Φ d	r	b A	b B		1501	1502	1503	1904	1905	1906
TPGW110304	11	6.35	3.18	3.3	0.4	2.1		T01020	●	●	●	●	●	●
TPGW110308	11	6.35	3.18	3.3	0.8	1.8		T02020	●	●	●	●	●	●
TPGW160304	16	9.525	3.18	4.4	0.4	2.3	3.3	S01020	●	●	●	●	●	●
TPGW160308	16	9.525	3.18	4.4	0.8	2	3.0	S02020	●	●	●	●	●	●
TPGW16T304	16	9.525	3.97	4.4	0.4	2.3	3.3		●	●	●	●	●	●
TPGW16T308	16	9.525	3.97	4.4	0.8	2	3.0		●	●	●	●	●	●
TPGW16T312	16	9.525	3.97	4.4	1.2	1.7	2.7		●	●	●	●	●	●
TPGW160404	16	9.525	4.76	4.4	0.4	2.3	3.3		●	●	●	●	●	●
TPGW160408	16	9.525	4.76	4.4	0.8	2	3.0		●	●	●	●	●	●

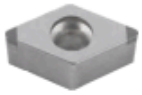


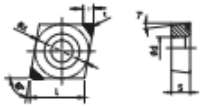
Model	Dimension(mm)							Standard cutting edge	Grade					
ISO	L	Φ i.c	s	Φ d	r	b A	b B		1501	1502	1503	1904	1905	1906
TCGW110304	11	6.35	3.18	2.8	0.4	2.1		T01020	●	●	●	●	●	●
TCGW110308	11	6.35	3.18	2.8	0.8	1.8		T02020	●	●	●	●	●	●
TCGW16T304	16	9.525	3.97	4.4	0.4	2.3	3.3	S01020	●	●	●	●	●	●
TCGW16T308	16	9.525	3.97	4.4	0.8	2	3.0	S02020	●	●	●	●	●	●
TCGW16T312	16	9.525	3.97	4.4	1.2	1.7	2.7		●	●	●	●	●	●

Remarks:

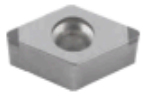
- **T**he standard cutting length is A standard. Please specify in your order if B standard is required.
- Customized cutting edge is available.

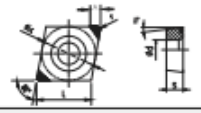
K Series Super Finishing Tip Brazed Inserts





Model	Dimension(mm)							Standard cutting edge	Grade					
ISO	L	Φ i.c	s	Φ d	r	b A	b B		1501	1502	1503	1904	1905	1906
CCGW09T304-2S	9	9.525	3.97	4.4	0.4	2.5	3.3	T01020	●	●	●	●	●	●
CCGW09T308-2S	9	9.525	3.97	4.4	0.8	2.3	3.1		●	●	●	●	●	●
CCGW09T312-2S	9	9.525	3.97	4.4	1.2	2.2	3.0	T02020	●	●	●	●	●	●
CCGW120404-2S	12	12.7	4.76	5.5	0.4	2.5	3.3	S01020	●	●	●	●	●	●
CCGW120408-2S	12	12.7	4.76	5.5	0.8	2.3	3.1		●	●	●	●	●	●
CCGW120412-2S	12	12.7	4.76	5.5	1.2	2.2	3.0	S02020	●	●	●	●	●	●



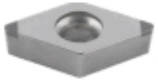


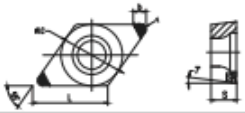
Model	Dimension(mm)							Standard cutting edge	Grade					
ISO	L	Φ i.c	s	Φ d	r	b A	b B		1501	1502	1503	1904	1905	1906
CPGW090304-2S	9	9.525	3.18	4.4	0.4	2.5	3.3	T01020	●	●	●	●	●	●
CPGW090308-2S	9	9.525	3.18	4.4	0.8	2.3	3.0		●	●	●	●	●	●
CPGW090312-2S	9	9.525	3.18	4.4	1.2	2.2	3.0	T02020	●	●	●	●	●	●
CPGW09T304-2S	9	9.525	3.97	4.4	0.4	2.5	3.3	S01020	●	●	●	●	●	●
CPGW09T308-2S	9	9.525	3.97	4.4	0.8	2.3	3.1		●	●	●	●	●	●
CPGW09T312-2S	9	9.525	3.97	4.4	1.2	2.2	3.0	S02020	●	●	●	●	●	●

Remarks:

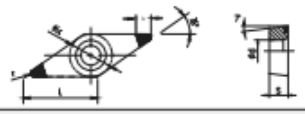
- **T**he standard cutting length is A standard. Please specify in your order if B standard is required.
- Customized cutting edge is available.

K Series Super Finishing Tip Brazed Inserts

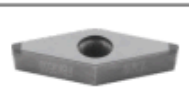


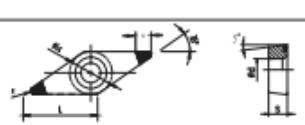


Model	Dimension(mm)							Standard cutting edge	Grade					
ISO	L	Φ i.c	s	Φ d	r	b A	b B		1501	1502	1503	1904	1905	1906
DCGW11T304-2S	11	9.525	3.97	4.4	0.4	2.5	3.3	T01020 T02020 S01020 S02020	●	●	●	●	●	●
DCGW11T308-2S	11	9.525	3.97	4.4	0.8	2.1	2.9		●	●	●	●	●	●



Model	Dimension(mm)							Standard cutting edge	Grade					
ISO	L	Φ i.c	s	Φ d	r	b A	b B		1501	1502	1503	1904	1905	1906
VCGW110304	11	6.35	3.18	2.8	0.4	2.8	3.5	T01020	●	●	●	●	●	●
VCGW110308	11	6.35	3.18	2.8	0.8	2	2.7		●	●	●	●	●	●
VCGW110312	11	6.35	3.18	2.8	1.2	1.3	1.9	T02020	●	●	●	●	●	●
VCGW160404-2S	16	9.525	4.76	4.4	0.4	2.8	3.5	S01020	●	●	●	●	●	●
VCGW160408-2S	16	9.525	4.76	4.4	0.8	2	2.7		●	●	●	●	●	●
VCGW160412-2S	16	9.525	4.76	4.4	1.2	1.3	1.9	S02020	●	●	●	●	●	●

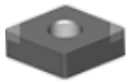
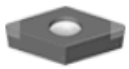




Model	Dimension(mm)							Standard cutting edge	Grade					
ISO	L	Φ i.c	s	Φ d	r	b A	b B		1501	1502	1503	1904	1905	1906
VBGW110304	11	6.35	3.18	2.8	0.4	2.8	3.5	T01020	●	●	●	●	●	●
VBGW110308	11	6.35	3.18	2.8	0.8	2	2.7		●	●	●	●	●	●
VBGW110312	11	6.35	3.18	2.8	1.2	1.3	1.9	T02020	●	●	●	●	●	●
VBGW160404-2S	16	9.525	4.76	4.4	0.4	2.8	3.5	S01020	●	●	●	●	●	●
VBGW160408-2S	16	9.525	4.76	4.4	0.8	2	2.7		●	●	●	●	●	●
VBGW160412-2S	16	9.525	4.76	4.4	1.2	1.3	1.9	S02020	●	●	●	●	●	●

Remarks:

- **T**he standard cutting length is A standard. Please specify in your order if B standard is required.
- Customized cutting edge is available.

Grade	Insert	Insert Model	Radius
K1501 X7, K1502 X7, K1500		CCGW0602	04
		CCGW09T3	04
		CCGW1204	12
		CNGA1204	08
			16
		DCGW11T3	04
		DNGA1504	08
		TCGW0902	04
		TCGW1102	04
			08
		TNGA1604	16
		VNGA1604	04
		VCGW1604	04

Grade	Insert	Insert Model	Radius
K1904 X6, K1905 X6, K1906 X6, K1880, K1920		CCGW0602	04
		CCGW09T3	04
		CCGW1204	08
		CNGA1204	12
			08
		DCGW0702	04
		DCGW11T3	04
		DNGA1504	08
		TCGW0902	04
		TCGW1102	04
		TCGW1103	08
		TNGA1604	08
		VNGA1604	08
		VBGW1604	04
			08
		WNGA0804	08

CBN and PCBN Cutting Tools – Exceptional Hardness and Wear Resistance

CBN (Cubic Boron Nitride) and PCBN (Polycrystalline Cubic Boron Nitride) cutting tools are known for their exceptional hardness, thermal stability, and resistance to wear, making them ideal for high-speed machining and finishing of hard and abrasive materials. These tools are particularly effective in the automotive, aerospace, and heavy machinery industries, where precision and durability are crucial.

Advantages:

- **Superior Hardness and Toughness:** CBN and PCBN tools offer superior hardness second only to diamond, providing excellent wear resistance and longevity in challenging machining conditions.
- **High Thermal Stability:** These tools maintain their cutting performance at elevated temperatures, allowing for high-speed machining without losing their edge.
- **Enhanced Surface Finish:** PCBN tools deliver superior surface finish and precision, reducing the need for secondary finishing operations.
- **Versatile Applications:** Suitable for machining hardened steels, cast irons, high-speed steels, and superalloys, CBN and PCBN tools provide versatile solutions for a wide range of industrial applications.

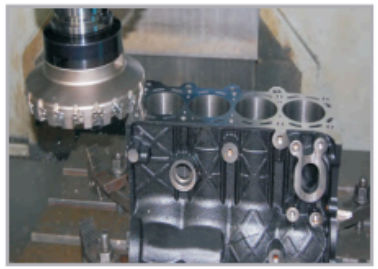
Applications:

- **Automotive Components:** Ideal for machining brake discs, gears, bearings, and other components requiring high wear resistance and precision.
- **Aerospace Parts:** Suitable for processing high-strength alloys and components exposed to extreme conditions.
- **Heavy Machinery:** Effective in the production of mining machinery, rolls, and other high-impact and wear-resistant parts.

Technical Details and Cutting Parameters:

- **Cutting Speed:** CBN and PCBN tools can achieve cutting speeds ranging from 80 to 1200 m/min, depending on the material and machining conditions. Higher speeds are possible for continuous and light interrupted cutting operations.
- **Feed Rate:** Recommended feed rates vary from 0.05 to 0.5 mm/rev, ensuring optimized material removal and surface quality.
- **Depth of Cut:** For roughing operations, depths of cut can range from 0.5 to 5.0 mm, while finishing operations typically use shallower cuts between 0.1 and 0.5 mm.
- **Maintenance and Performance Monitoring:** Regular inspection of the cutting edge for wear or damage is essential to maintain optimal performance. Monitoring cutting forces and surface finish can also provide early indicators of tool wear, allowing for timely replacements and adjustments.

World Cutters Innovative PCBN Cutting Tools Milling

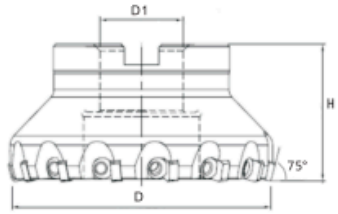


Compared with carbide inserts and ceramic inserts, WORLD CUTTERS PCBN inserts have outstanding advantages in milling cast iron and hardened steel as below:

- Longer tool life
- Higher production efficiency
- Improved cost efficiency

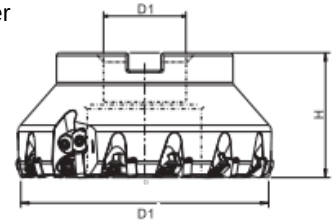
FACE Milling Cutter Series

Indexable PCBN high-efficiency face milling cutter



Specification	Teeth No	Dimension (mm)			Insert Model	Spare Parts		
		Φ D	φ D1	φ H		Wedge	Double head screw	Wrench
FME01-063-A22-SN09-07	7	63	22	40	SNEN0904ENS	FME01-1	FME01-2	FME01-3
FME01-080-A27-SN09-09	9	80	27	50				
FME01-100-B32-SN09-12	12	100	32	50				
FME01-125-B40-SN09-14	14	125	40	63				
FME01-160-B40-SN09-18	18	160	40	63				
FME01-200-C50-SN09-24	24	200	50	63				
FME01-250-C60-SN09-30	30	250	60	63				
FME01-315-D60-SN09-36	36	315	60	70				

Indexable PCBN precise face milling cutter



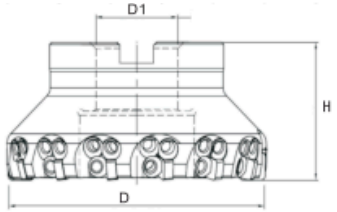
Specification	Teeth No		Dimension (mm)			Insert Model		Spare Parts			
			Φ D	φ D1	φ H	Milling inserts	Wiper inserts	Wedge	Adjustment block	Double head screw	Wrench
FME01-063-A22-SN09-07	6	1	63	22	40	SNEN0904ENS	SNEX1204ZZ	FME02-1	FME02-2	FME02-3	FME02-4
FME01-080-A27-SN09-09	8	1	80	27	50						
FME01-100-B32-SN09-12	10	2	100	32	50						
FME01-125-B40-SN09-14	12	2	125	40	63						
FME01-160-B40-SN09-18	15	3	160	40	63						
FME01-200-C50-SN09-24	20	4	200	50	63						
FME01-250-C60-SN09-30	25	5	250	60	63						
FME01-315-D60-SN09-36	30	6	315	60	70						

WORLDCutters
We Shape Tomorrow's Precision

World Cutters Innovative PCBN Milling Inserts

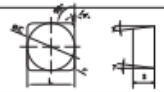
Higher CNC grinding precision, improved professional design of milling cutting edges, and stricter super finishing of cutting edges contribute to World Cutters' PCBN milling inserts with superior performance.

Indexable PCBN super finishing face milling cutter



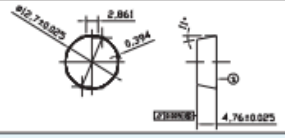
Specification	Teeth No		Dimension (mm)			Insert Model		Spare Parts			
			Φ D	φ D1	φ H	Milling inserts	Wiper inserts	Wedge	Adjustment block	Double head screw	Wrench
FME01-063-A22-SN09-07	6	1	63	22	40	SNEN0904ENS	SNEX1204ZZ	FME03-1	FME03-2	FME03-3	FME03-4
FME01-080-A27-SN09-09	8	1	80	27	50						
FME01-100-B32-SN09-12	10	2	100	32	50						
FME01-125-B40-SN09-14	12	2	125	40	63						
FME01-160-B40-SN09-18	15	3	160	40	63						
FME01-200-C50-SN09-24	20	4	200	50	63						
FME01-250-C60-SN09-30	25	5	250	60	63						
FME01-315-D60-SN09-36	30	6	315	60	70						

Milling insert



Model	Dimension (mm)				Grade		
ISO	L	Φ i.c	s	r	N0500		
SCEN090412	9	9.525	4.76	1.2		●	
SCEN120412	12	12.7	4.76	1.2			
SCEN150712	15	15.875	7.94	1.2	●		

Milling insert

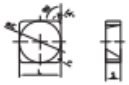


Model	Dimension (mm)		Grade		
ISO	Φ i.c	s	N0025		
OPHN0504ZZH-A57	12.7	4.76	●		
OPHX0504ZZH-A57	12.7	4.76	●		

Milling insert

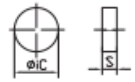
Model	Dimension (mm)				Grade		
ISO	L	Φ i.c	s	r	N0500	N0025	
SNEN0903ENS	9	9.525	3.18	0.8		●	
SNEN0904ENS	9	9.525	4.76	0.8		●	
SNEN1204ENS	12	12.7	4.76	1.2		●	
SNEN1207ENS	12	12.7	7.94	1.2		●	
SNEN120712	12	12.7	7.94	1.2		●	
SNEN19T6ENS	19	19.05	6.8	1.6	●		

Wiper insert



Model	Dimension (mm)				Grade		
ISO	L	Φ i.c	s	r	N0025		
SNEX1203ZZ	12	12.7	3.18	1.2	●		
SNEX1204ZZ	12	12.7	4.76	1.2	●		

Milling insert



Model	Dimension (mm)				Grade		
ISO	L	Φ i.c	s	r	N0025		
RNEN090300	9	9.525	3.18	0	●		
RNEN090400	9	9.525	4.76	0	●		
RNEN120400	12	12.76	4.76	0	●		
RNEN120700	12	12.76	7.94	0	●		

Remarks:

- Products available.
- Customized cutting edge is available.

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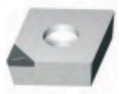
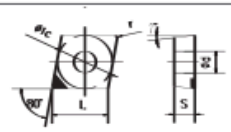
World Cutters Innovative PCD Inserts

Grade: P520
Application Features: Continuous - interrupted
Application Scope: Low silicon aluminum alloy, carbon fiber composite material, and titanium alloy.
Application Industry: Aluminum alloy super finishing industry, aerospace spare parts.

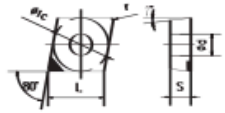
Grade: P220
Application Features: Continuous - interrupted
Application Scope: High silicon aluminum alloy, graphite mold, woodworking, metal matrix composites, wood-based composites.
Application Industry: Automotive spare parts, graphite mold, woodworking.

Grade: P020
Application Features: Continuous - interrupted
Application Scope: Medium and low silicon aluminum alloy, graphite, metal matrix composites, wood-based composites.
Application Industry: Automotive spare parts, graphite mold, woodworking, plastic glass fiber.

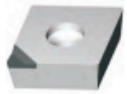


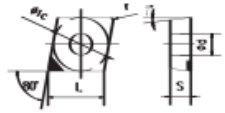


Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
CCGX060202 CCGX060204 CCGX060208	6.35	2.38	1		●	
CCGX09T302 CCGX09T304 CCGX09T308	9.525	3.18	1		●	
CCGX120402 CCGX120404 CCGX120408	12.7	4.76	1		●	



Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
CCGW060202 CCGW060204 CCGW060208	6.35	2.38	1		●	
CCGW09T302 CCGW09T304 CCGW09T308	9.525	3.18	1		●	
CCGW120402 CCGW120404 CCGW120408	12.7	4.76	1		●	





Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
CCGT060202 CCGT060204 CCGT060208	6.35	2.38	1		●	
CCGT09T302 CCGT09T304 CCGT09T308	9.525	3.18	1		●	
CCGT120402 CCGT120404 CCGT120408	12.7	4.76	1		●	

Remarks:

- Give priority to recommended products.

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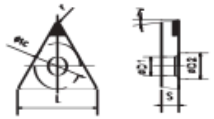
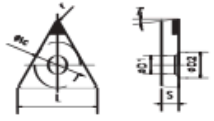
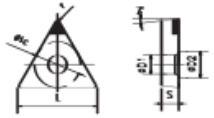


Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
TCGX090202 TCGX090204 TCGX090208	5.56	2.38	1		●	
TCGX110202 TCGX110204 TCGX110208	6.35	2.38	1		●	
TCGX16T302 TCGX16T304 TCGX16T308	9.525	3.97	1		●	



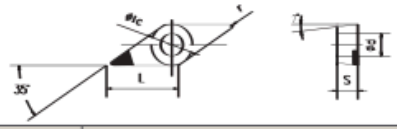
Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
TCGW090202 TCGW090204 TCGW090208	5.56	2.38	1		●	
TCGW110202 TCGW110204 TCGW110208	6.35	2.38	1		●	
TCGW16T302 TCGW16T304 TCGW16T308	9.525	3.97	1		●	



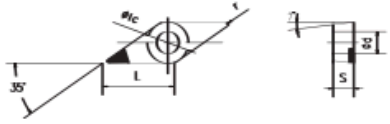
Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
TCGT090202 TCGT090204 TCGT090208	5.56	2.38	1		●	
TCGT110202 TCGT110204 TCGT110208	6.35	2.38	1		●	
TCGT16T302 TCGT16T304 TCGT16T308	9.525	3.97	1		●	

Remarks:

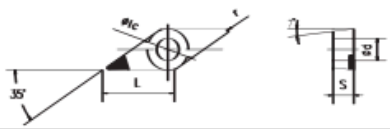
- Give priority to recommended products.



Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
VCGX110302 VCGX110304 VCGX110308	6.35	3.18	1		●	
VCGX160402 VCGX160404 VCGX160408	9.525	4.76	1		●	



Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
VCGW110302 VCGW110304 VCGW110308	6.35	3.18	1		●	
VCGW160402 VCGW160404 VCGW160408	9.525	4.76	1		●	



Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
VCGT110302 VCGT110304 VCGT110308	6.35	3.18	1		●	
VCGT160402 VCGT160404 VCGT160408	9.525	4.76	1		●	

Remarks:

- Give priority to recommended products.

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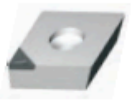
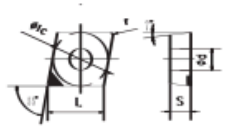
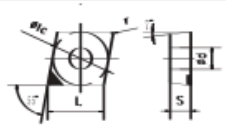




Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
DCGX070202 DCGX070204 DCGX070208	6.35	2.38	1		●	
DCGX11T302 DCGX11T304 DCGX11T308	9.525	3.97	1		●	

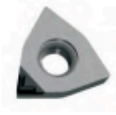


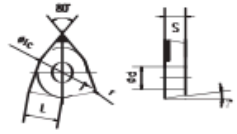
Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
DCGW070202 DCGW070204 DCGW070208	6.35	2.38	1		●	
DCGW11T302 DCGW11T304 DCGW11T308	9.525	3.97	1		●	

Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
DCGT070202 DCGT070204 DCGT070208	6.35	2.38	1		●	
DCGT11T302 DCGT11T304 DCGT11T308	9.525	3.97	1		●	

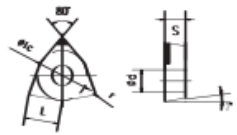
Remarks:

- Give priority to recommended products.

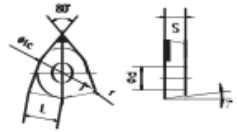




Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
WCGX040202 WCGX040204 WCGX040208	6.35	2.38	1		●	
WCGX06T302 WCGX06T304 WCGX06T308	9.525	3.97	1		●	
WCGX080402 WCGX080404 WCGX080408	12.7	4.76	1		●	



Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
WCGW040202 WCGW040204 WCGW040208	6.35	2.38	1		●	
WCGW06T302 WCGW06T304 WCGW06T308	9.525	3.97	1		●	
WCGW080402 WCGW080404 WCGW080408	12.7	4.76	1		●	



Model	Dimension		Edge No.	Grade		
ISO	Φ i.c	S		P520	P020	P220
WCGT040202 WCGT040204 WCGT040208	6.35	2.38	1		●	
WCGT06T302 WCGT06T304 WCGT06T308	9.525	3.97	1		●	
WCGT080402 WCGT080404 WCGT080408	12.7	4.76	1		●	

Remarks:

- Give priority to recommended products.

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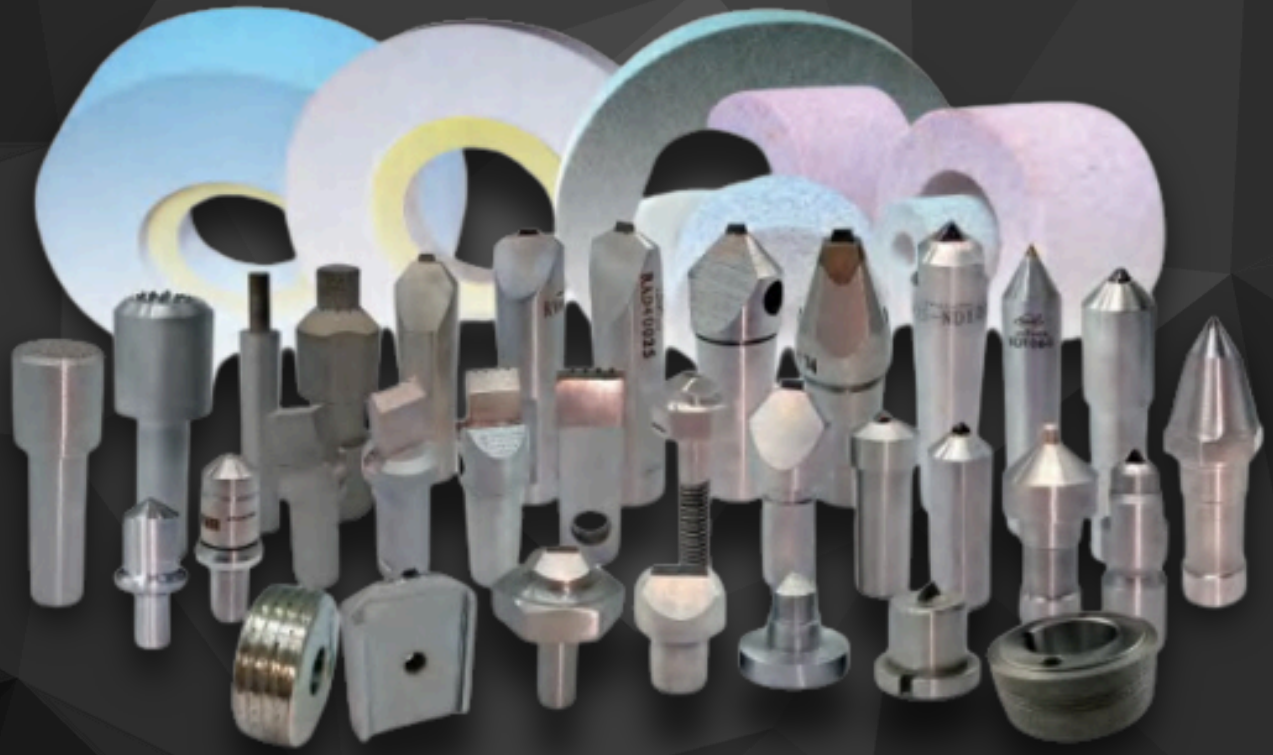
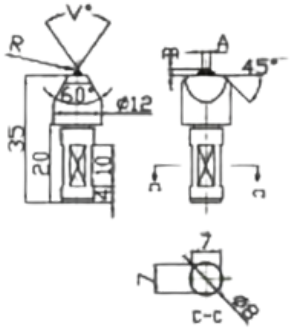
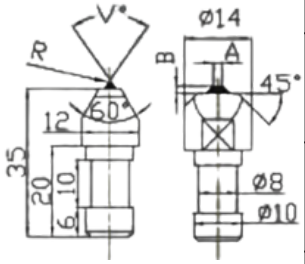
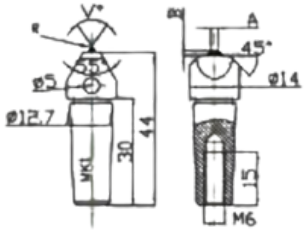
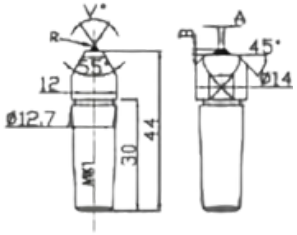
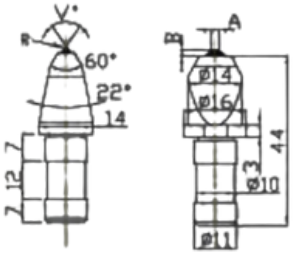
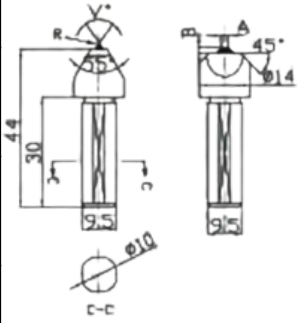
Diamond Tools

NATURAL DIAMOND

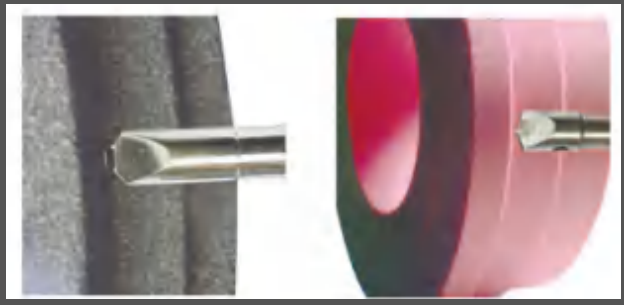


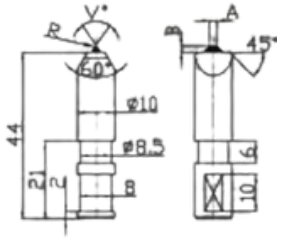
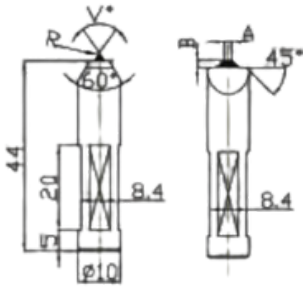
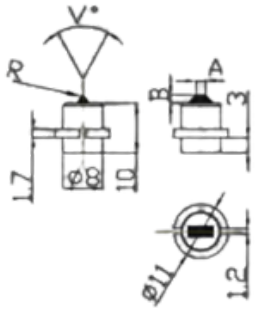
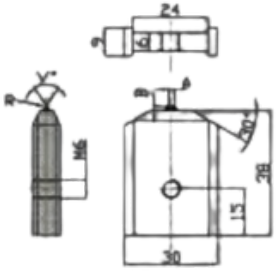
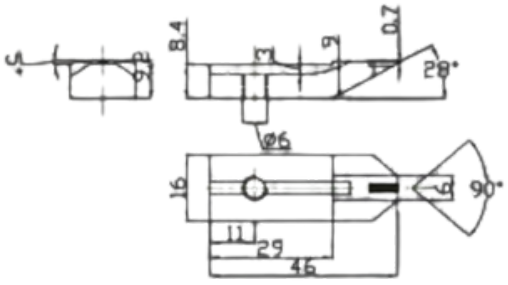
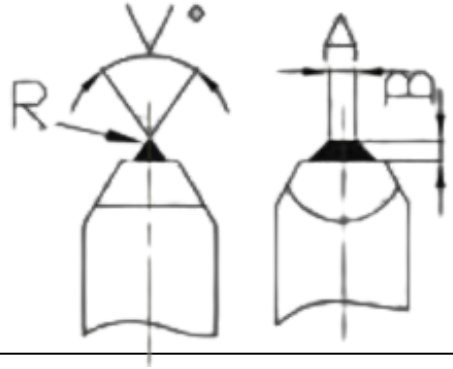
Model No	Drill Depth A (mm)	Form of Sample	Drill Angle V	Drill Diameter R	Model No	Drill Depth A (mm)	Form of Sample	Drill Angle V	Drill Diameter R
RV151	1.5		40	0.2	RV152	1.5		40	0.4
RV201	2.0		55	0.2	RV202	2.0		55	0.4
RV251	2.5		60	0.3	RV252	2.5		60	0.6
RV301	3.0		60	0.3	RV302	3.0		60	0.6
RV153	1.5		40	0.2	RV154	1.5		40	0.4
RV203	2.0		55	0.2	RV204	2.0		55	0.4
RV253	2.5		60	0.3	RV254	2.5		60	0.6
RV303	3.0		60	0.3	RV304	3.0		60	0.6
RV155	1.5		40	0.2	RV156	1.5		40	0.4
RV205	2.0		55	0.2	RV206	2.0		55	0.4
RV255	2.5		60	0.3	RV256	2.5		60	0.6
RV305	3.0		60	0.3	RV306	3.0		60	0.6

ND-RV Series Forming Tool

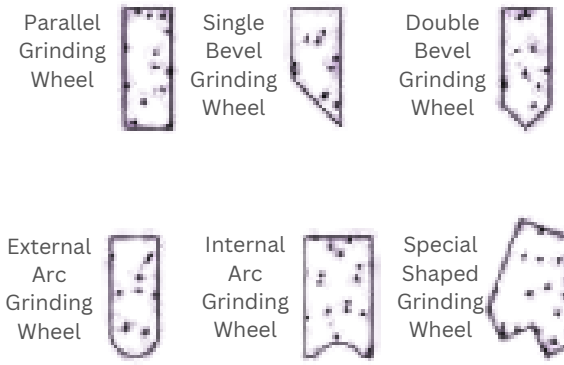
- This product is used for the trimming of flat grinding wheels, ribbed grinding wheels, ribbed grinding wheels with steps, and other various grinding wheels. It is a special diamond dressing tool for trimming domestically and imported digital controlled forming grinding wheels.

- Regarding the requirements of the texture, shape, hardness, and purity of the diamond, through professional cutting, grinding, and polishing processes, it can achieve specific angles, radii, and shapes as per the processing needs.



Model No	Drill Depth A (mm)	Form of Sample	Drill Angle V	Drill Diameter R	Model No	Drill Depth A (mm)	Form of Sample	Drill Angle V	Drill Diameter R
RV157	1.5		40	0.3	RV158	1.5		40	0.3
RV207	2.0		55	0.4	RV208	2.0		55	0.4
RV257	2.5		60	0.5	RV258	2.5		60	0.5
RV307	3.0		70	0.7	RV308	3.0		70	0.7
RV159	1.5		40	0.3	RV1510	1.5		40	0.3
RV209	2.0		55	0.4	RV2010	2.0		55	0.4
RV259	2.5		60	0.5	RV2510	2.5		60	0.5
RV309	3.0		70	0.7	RV3010	3.0		70	0.7
RV2011							Detailed close-up view of RV series forming tools 		

Note: When using artificial diamond for the above forming tools, the prefix "RV" in the original model number can be changed to "RVD".



ND-V Series Angle Cutter

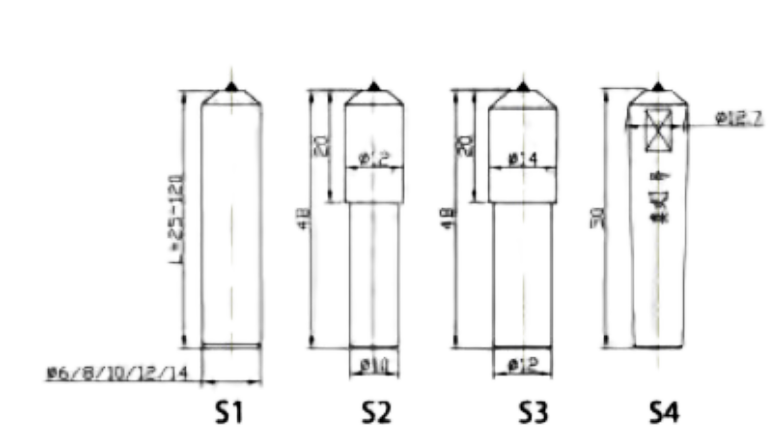
This product has precise angle grinding, suitable for precision dressing of forming grinding wheels in tool grinders, internal grinders, and external grinders.

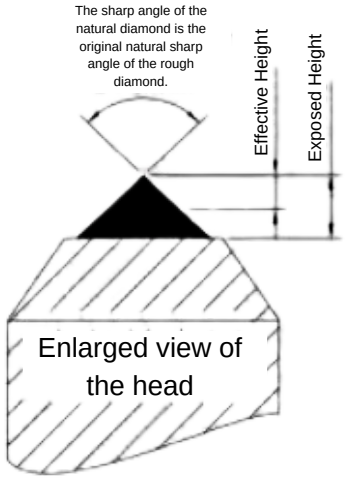
Note: Models with (T) have enhanced diamond quality.

Product Model No	Angle V (°)	Product Shape	Product Size (Φ×L)	Application Field
VO60 (T)	60	O (Round shape) 	1. Φ 3×50 2. Φ 6×50 3. Φ 8×50 4. Φ 10×50 5. Φ 12×50	Mainly used for precision trimming of small grinding wheels in the mold industry and bearing industry.
VO85 (T)	85			
VH60 (T)	60	H (Square shape) 		Mainly used for precision trimming of internal grinding wheels, also used for trimming angles of other grinding wheels.
VH90 (T)	90			
VH110 (T)	110			

Note: Refer to the above diagrams S1, S2, S3, S4 for the shape and size of the shank.

Model No	Outer Height	Effective Height	Model No	Outer Height	Effective Height	Model No	Outer Height	Effective Height
11	0.8	0.5	22T	1.0	1.0	33A	0.9	0.7
22	1.0	0.7	33T	1.2	1.2	44A	1.0	1.0
33	1.2	0.8	44T	1.4	1.4	55A	1.1	1.0
44	1.4	0.9	55T	1.5	1.5	66A	1.2	1.0
55	1.5	1.0	66T	1.6	1.6	77A	1.3	1.0
66	1.6	1.2	77T	1.7	1.7	88A	1.4	1.0
77	1.7	1.2	88T	1.8	1.8	100A	1.5	1.0
88	1.8	1.3	100T	1.9	1.9	200A	1.7	1.5
100	1.9	1.4	200T	2.1	2.1	300A	2.0	1.8
200	2.2	1.6	300T	2.3	2.3	110A	2.2	Diamond Quality Sequentially Improved
300	2.4	1.8	110T	2.4	Diamond Quality Sequentially Improved	112T	2.2	
			112T	2.4		120A	2.2	
			120T	2.4		125A	2.2	
			125T	2.4		130A	2.2	





ND - Series Diamond Dressing Tools (Natural Diamond Grinding Wheel Tools)

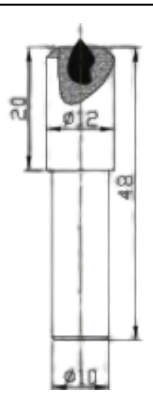
- The exposed sharp angles of the diamond are natural diamond sharp angles. According to the required precision, select the corresponding model. Ensure the high-spec diamond quality with effective height for the corresponding model. Standardized outer height and effective height can meet the internal control management consumption control of enterprises. Used for semi-precision grinding wheel dressing. Generally, this product is not used for fine grinding adjustment. When the wear exceeds the effective height, it can be used for coarse grinding wheel dressing. If the customer has special requirements for fine dressing, it can be judged according to the diamond usage situation.

- The series with T in the model has a better upper and lower structure of the diamond, with a longer effective height, suitable for semi-precision grinding of larger grinding wheels.

- The series with A in the model has a complete diamond body, with a better tip and internal quality, used for precision grinding wheel dressing. If the exposed sharp angle of the diamond is worn and cannot meet the dressing precision requirements, it can be returned to our factory for adjustment, and the good natural sharp angle inside the shank can be adjusted and used as a new product.

ND-L Series Diamond Pen

This product is suitable for rough grinding of various types of parallel grinding wheels. The diamond is used until it is finished and is not refurbished. It is an economical consumable.

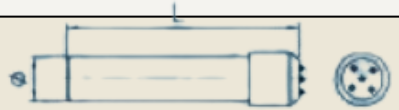
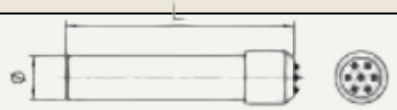


Product Model No	Product Performance	Product Model No	Product Performance
L103	Diamond weight Sequentially increased	L105T	Diamond weight Sequentially increased
L105		L110T	
L110		L115T	Diamond quality Sequentially enhanced
L210	2 diamonds	L120T	
L310	3 diamonds	L125T	
L103T		L130T	

Note: Models marked with (T) have better internal diamond quality, enhanced service life, and impact resistance.

ND-C Series Diamond Pen

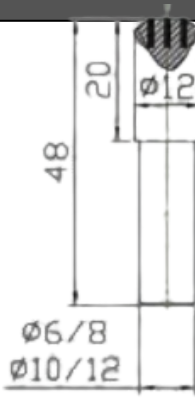
There are three-point, five-point, seven-point, and multi-point types. This type of product has a long lifespan, with multiple points participating in the work, which can effectively ensure the dimensional accuracy and sharpness of the grinding wheel. It is often used for trimming larger width parallel grinding wheels and centerless grinding wheels.

Model No	Layer	Shank Shape	Shank Size (Φ × L mm)
C1305A	1	A 	1. Φ 8 × 48
C1510B	1	B 	2. Φ 10 × 48
C1715C	1	C 	3. Φ 12 × 48

ND-D Series Diamond Pen

This product is suitable for the trimming of parallel grinding wheels. It offers stable usage, is economical, and is used until completely worn out without needing refurbishment. It is particularly effective when trimming grinding wheels of general hardness, making it a cost-effective grinding wheel dressing tool.

Product Model No	Applicable Grinding Wheel Diameter and Grit Size	Shank Size
DA108	Φ 200–500, 80–100 mesh	
DC110	Φ 500–700, 60–80 mesh	
DC120	Φ 500–750, 46–60 mesh	
DC150	Φ 500–750, 46–60 mesh	
DD160	Φ 500–950, 46–60 mesh	

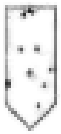
Product Model No	Applicable Grinding Wheel Diameter and Grit Size	Shank Size
DA305	Φ 200–400, 80–120 mesh	
DA308	Φ 400–600, 60–80 mesh	
DC307	Φ 200–400, 60–80 mesh	
DC310	Φ 400–600, 60–80 mesh	
DC312	Φ 400–700, 46–60 mesh	
DD312	Φ 400–600, 60 mesh or coarser	

ND-F Series Diamond Pen

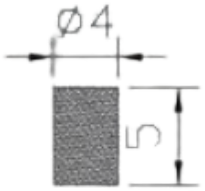
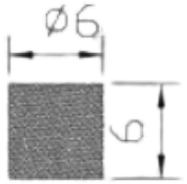
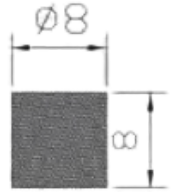
This product is suitable for the precision dressing of small and medium-sized tool grinding wheels, thread grinding wheels, and other fine grinding wheels.

Parallel Grinding Wheel

Single Bevel Grinding Wheel



Double Bevel Grinding Wheel

Model No	Working Head Size (mm)	Diamond Grit Size (Mesh)	Shank Shape	Shank Size (Φ × L mm)	Applicable Scope
F1A	1. 	35, 60, 80, 100, 120, 150, 240, 300, 600	A 	1. Φ 6 x 30 2. Φ 8 x 40 3. Φ 10 x 48 4. Φ 11 x 48 5. Φ 12 x 48	General grinding wheel trimming, diameter less than 200 mm
F1B			B 		Tool grinding wheel trimming
F2A	2. 	35, 60, 80, 100, 120, 150, 240, 300, 600	A 	1. Φ 6 x 30 2. Φ 8 x 40 3. Φ 10 x 48 4. Φ 11 x 48 5. Φ 12 x 48	General grinding wheel trimming, diameter less than 250 mm
F2B			B 		Tool grinding wheel trimming
F3A	3. 	35, 60, 80, 100, 120, 150, 240, 300, 600	A 	1. Φ 8 x 40 2. Φ 10 x 48 3. Φ 11 x 48 4. Φ 12 x 48	General grinding wheel trimming, diameter less than 350 mm
F3B			B 		Tool grinding wheel trimming

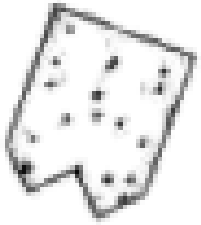
ND-F Series Diamond Pen

This product is suitable for the trimming of flat, formed, and stepped grinding wheels. It offers stable usage, is economical and durable, and provides high cost-effectiveness for trimming medium and large grinding wheels.

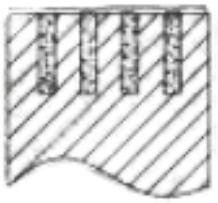
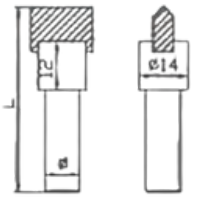
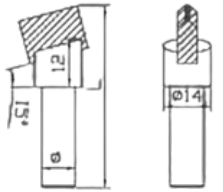
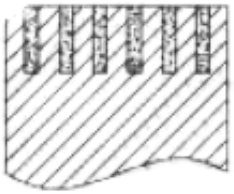
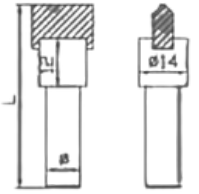
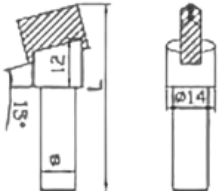
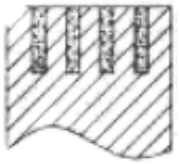
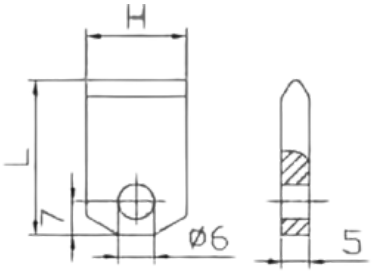
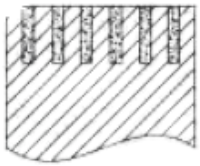
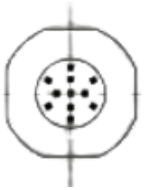
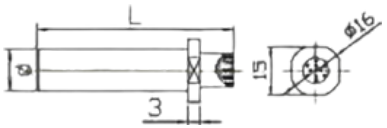
Parallel Grinding Wheel

Single Bevel Grinding Wheel

Double Bevel Grinding Wheel

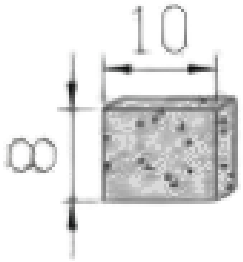
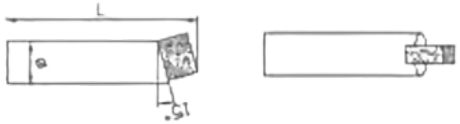
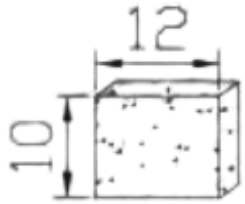
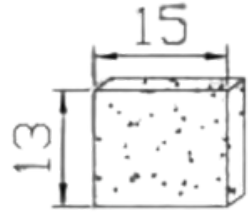
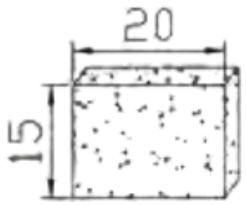
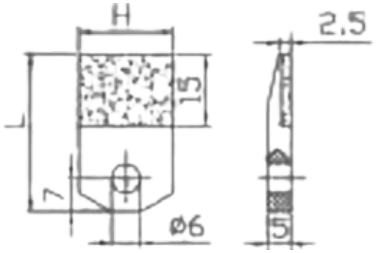


Special Shaped Grinding Wheel

Product Model No	Applicable Grinding Wheel Diameter and Grit Size	Diamond Grit Size and Condition	Shank Shape	Shank Size (Φ × L mm)
PD4A05A	Φ 400–750, 80–120 mesh		A 	1. Φ 8 x L48 2. Φ 10 x L48 3. Φ 12 x L48
PD4C07A	Φ 400–750, 60–80 mesh			
PD4C10A	Φ 400–750, 46–60 mesh			
PD4C12A	Φ 400–750, 46 mesh or coarser			
PD4A05B	Φ 400–750, 80–120 mesh		B 	
PD4C07B	Φ 400–750, 60–80 mesh			
PD4C10B	Φ 400–750, 46–60 mesh			
PD4C12B	Φ 400–750, 46 mesh or coarser			
PD6A05A	Φ 750 or more, 80–120 mesh		A 	1. Φ 8 x L48 2. Φ 10 x L48 3. Φ 12 x L48
PD6C07A	Φ 750 or more, 60–80 mesh			
PD6C10A	Φ 750 or more, 46–60 mesh			
PD6C12A	Φ 750 or more, 46 mesh or coarser			
PD6A05B	Φ 750 or more, 80–120 mesh		B 	
PD6C07B	Φ 750 or more, 60–80 mesh			
PD6C10B	Φ 750 or more, 46–60 mesh			
PD6C12B	Φ 750 or more, 46 mesh or coarser			
PD4A05C	Φ 400–750, 80–120 mesh		C 	1. L28 × H10
PD4C07C	Φ 400–750, 60–80 mesh			
PD4C10C	Φ 400–750, 46–60 mesh			
PD4C12C	Φ 400–750, 46 mesh or coarser			
PD6A05C	Φ 750 or more, 80–120 mesh			1. L28 × H20 2. L33 x H20
PD6C07C	Φ 750 or more, 60–80 mesh			
PD6C10C	Φ 750 or more, 46–60 mesh			
PD6C12C	Φ 750 or more, 46 mesh or coarser			
PD11A05D	Φ 750 or more, 80–120 mesh		D 	1. Φ 8 x L48 2. Φ 10 x L48 3. Φ 12 x L48
PD11C07D	Φ 750 or more, 60–80 mesh			
PD11C10D	Φ 750 or more, 46–60 mesh			
PD11C12D	Φ 750 or more, 46 mesh or coarser			

ND-PF Series Dressing Tool

- Multiple diamond particles participate in the dressing simultaneously, ensuring the precision of the grinding wheel dressing effectively. It can be made in different sizes to be suitable for the dressing of large and medium grinding wheels.
- The product has good stability, high cost performance, and long service life. With different diamond grit sizes, it can be used for the dressing of coarse, medium, and fine grit grinding wheels.

Product Model No	Applicable Grinding Wheel Diameter and Grit Size	Diamond Part Size	Shank Shape	Shank Size (Φ × L mm)
PF1AW70A	Φ 400–500, 80–100 mesh	1A 	A 	1. Φ 8 x L48 2. Φ 10 x L48 3. Φ 12 x L48
PF1AW35A	Φ 400–500, 60–80 mesh			
PF1A200A	Φ 400–500, 46–60 mesh			
PF1A50A	Φ 400–500, 46 mesh or coarser			
PF1AW70B	Φ 500–750, 80–100 mesh		B 	
PF1AW35B	Φ 500–750, 60–80 mesh			
PF1A200B	Φ 500–750, 46–60 mesh			
PF1A50B	Φ 500–750, 46 mesh or coarser			
PF2AW70C	Φ 600–750, 80–100 mesh	2A 	C 	1. Φ 8 x L48 2. Φ 10 x L48 3. Φ 12 x L48
PF2AW35C	Φ 600–750, 60–80 mesh			
PF2A200C	Φ 600–750, 46–60 mesh			
PF2A50C	Φ 600–750, 46 mesh or coarser			
PF2AW70D	Φ 600–750, 80–100 mesh		D 	
PF2AW35D	Φ 600–750, 60–80 mesh			
PF2A200D	Φ 600–750, 46–60 mesh			
PF2A50D	Φ 600–750, 46 mesh or coarser			
PF3AW70C	Φ 750 or more, 80–100 mesh	3A 	C 	1. Φ 8 x L48 2. Φ 10 x L48 3. Φ 12 x L48
PF3AW35C	Φ 750 or more, 60–80 mesh			
PF3A200C	Φ 750 or more, 46–60 mesh			
PF3A50C	Φ 750 or more, 46 mesh or coarser			
PF3AW70D	Φ 750 or more, 80–100 mesh		D 	
PF3AW35D	Φ 750 or more, 60–80 mesh			
PF3A200D	Φ 750 or more, 46–60 mesh			
PF3A50D	Φ 750 or more, 46 mesh or coarser			
PF4AW70E	Φ 400 or more, external grinding wheel, 80–100 mesh	4A 	E 	1. L28 × H20 2. L33 x H20
PF4AW35E	Φ 400 or more, external grinding wheel, 60–80 mesh			
PF4A200E	Φ 400 or more, external grinding wheel, 46–60 mesh			
PF4A50E	Φ 400 or more, external grinding wheel, 46 mesh or coarser			

ND-Y Diamond Indenter

A high-quality natural diamond of specified weight is brazed onto a metal substrate and ground into a geometric shape with certain technical requirements, followed by mechanical processing. There are various types of indenters such as standard Rockwell and Vickers, used for material hardness identification on standard hardness testers in metrology departments.

<table>
<tr><th>Rockwell Indenter Model No</th><th>Product Image</th><th>Applicable Range</th><th>Product Specifications (Parts Size and Performance)</th><th>Vickers Indenter Model No</th><th>Product Image</th><th>Applicable Range</th><th>Product Specifications (Parts Size and Performance)</th></tr>
<tr><td>HRC-2</td><td>  </td><td>Normal diamond indenter, measures material hardness values from 20–50

High-quality diamond indenter, measures material hardness values from 50–90</td><td rowspan="2">1. Base dimensions: Φ6.35×10, Total length: 25mm,

2. Angle: a = 120° ± 15', R0.2 ± 0.01mm,

3. Special shank dimensions can be customized, 4. Can be refurbished as needed</td><td>HV-2</td><td>  </td><td>Total length: 13mm, Angle: 136° ± 15', Cylindricity: ≤1μm, Shank: Φ3.16×7 or Φ6×6 (approximate)</td><td rowspan="2">1. The diamond indenter is made based on the Vickers hardness tester structure,

2. Can be refurbished as needed,

3. Ensure compatibility of different hardness testers by adhering to the specified dimensions</td></tr>
<tr><td>HRC-3</td><td>  </td><td>Normal diamond indenter, measures material hardness values from 20–50

High-quality diamond indenter, measures material hardness values from 50–90</td><td>HV-6</td><td>  </td><td>Total length: 25mm, Angle: 136° ± 15', Cylindricity: ≤1μm, Shank: Φ6.35×10 or Φ10×15 (approximate)</td></tr>
<tr><td colspan="2">Other Shapes / Hardness Indenter</td><td colspan="6">    </td></tr>
</table>

ND-Y Diamond Roughness Measuring Head

ND-Y Series

ND-V Series

ND Series

ND-L Series

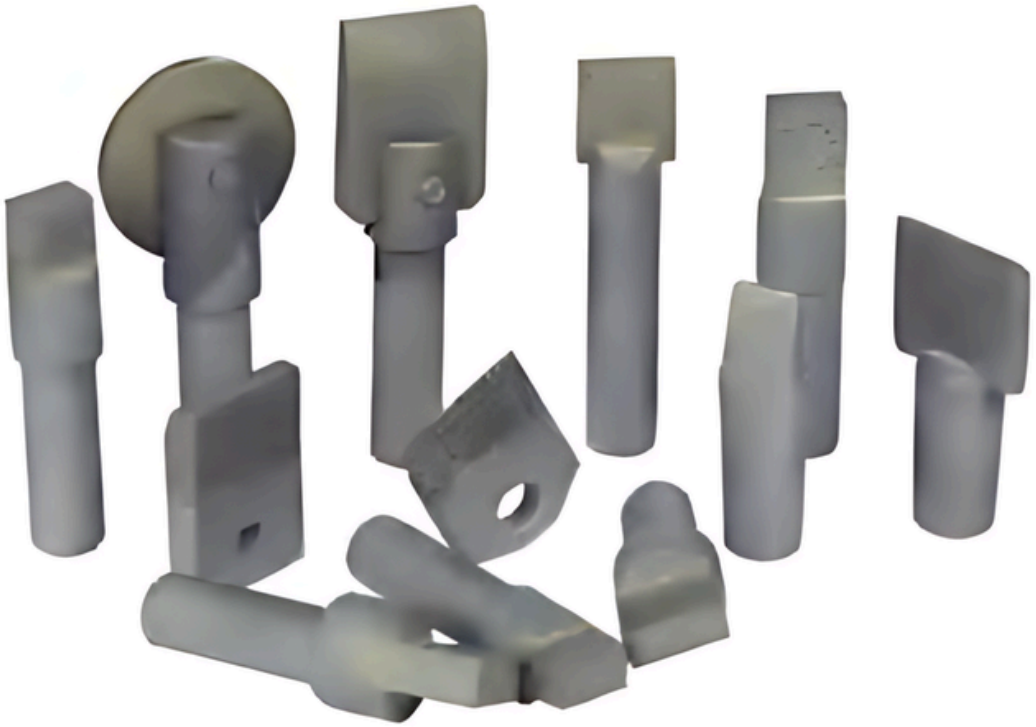
ND-L Series

ND-C Series

ND-F Series

ND-PD Series

ND-PF Series



ND-RV Series

ND-T Series Single Crystal Diamond Ultra-Precision Tool

Selected high-quality natural diamonds are brazed onto the tool shank using special welding techniques. These tools are manufactured through special geometric angle design and sharpening technology. They can be processed into various angles, radii, and edge sharpness according to customer requirements. They are mainly used for non-spherical and free-form optical surface processing, micro-nano processing, and ultra-precision machining, such as manufacturing optical organic glass, high-smoothness non-ferrous metals, ceramics, etc.

Natural diamond cutting tools are specially customized products, designed and manufactured according to the user's processing work and drawing requirements. Some samples are as follows:

ND-G Series Diamond Roller

- Diamond rollers can be used for large-scale forming grinding on special machine tools and gear grinding machines. They are high-efficiency, long-life, low-cost grinding wheel dressing tools.
- This series of products are non-standard products and are manufactured according to the customer's specific requirements.