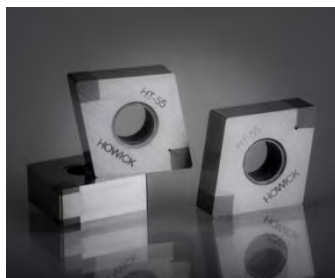




Howick
Tooling

PCD & PCBN Inserts 2012



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*****All Products can be made to your specification*****

Polycrystalline Diamond – PCD

PCD (POLYCRYSTALLINE DIAMOND)

Howick Tooling – PCD inserts provide premium performance, and they have proven to be very effective when cutting highly abrasive, low tensile strength, nonferrous, non-metallic & aluminium composite work materials.

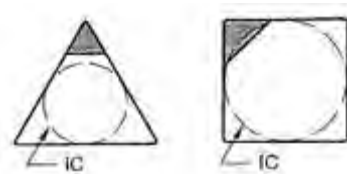
Howick Tooling PCD Tools are supplied with a larger high quality PCD Insert, making them harder and more wear resistant, even in demanding applications the tip will remain sharper for longer.

HOWICK TOOLING - PCD ADVANTAGES

Howick Tooling – PCD Advantages

- ✓ Provide up to 100 times the tool life of carbide
- ✓ They can be re-sharpened at the fraction of the cost of a new tool
- ✓ We stock most standard sizes & manufacture to your drawings
- ✓ We supply the complete tool

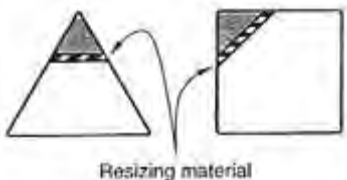
PCD &PCBN SERVICES OFFERED



We offer these types of services:

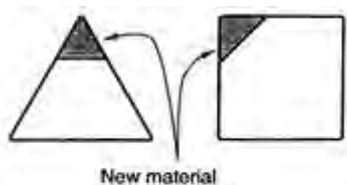
CLASS 1 - RELAP

The tools are contour ground. However the IC/Tool geometry is reduced. If it is essential that the tool geometry remains unchanged, a class 2-3 service can be done.



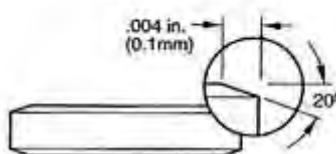
CLASS 2 - SHIM AND RELAP

Strips of resizing material are added to the back edges of the PCD/PCBN insert, and then contour ground to the original tool geometry.



CLASS 3 - RETIP

The PCD/PCBN material is replaced and reground to the original tool geometry.



EDGE PREPARATION

'T/K' Lands or honed edges can be applied to PCBN tools as required.

We manufacture and re-sharpen PCD tooling for all turning, boring, drilling and milling applications to your requirements or drawings.

PCD RECOMMENDED USE

Howick Tooling - PCD tipped tools offer superior wear resistance. They are recommended on the following materials:

Metallic:	Plastics:	NON-Metallic:
Aluminium Babbitt Brass, Bronze & Copper High Cobalt Sintered Carbide Magnesium Pre-sintered Carbide Zinc Alloys	Acrylic Fibreglass Epoxy Nylon Composites Phenolics Poly Carbonate P. V.C. Composites Teflon Composites	Carbon Carbon Fiber Composites Chip Board Pre-sintered Ceramic Graphite Hard Rubber Wood Products

PCD GRADES

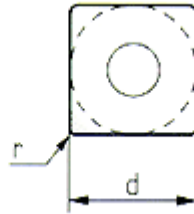
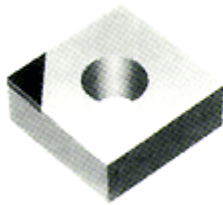
PCD sections are available in three grades:

PCD Grade	Fine:	Medium:	Coarse:
For use with:	Finishes less than 15 Micro inches (.4 micrometers)	Standard finishes	Very abrasive materials
<u>Grade Name</u>	<u>HT850</u>	<u>HT010</u>	<u>HT302</u>
Ideal for	Milling & rough cutting	Roughing & Finishing	Machining
Use Where	Extreme chip resistance, high abrasion resistance and mirror finishes are required.	A good balance of toughness and wear resistance is required. Roughing & Finishing are to be performed with a single tool. The Nature of the application is unknown.	Extreme abrasion resistance and good thermal stability is required.
Also suitable for	Machining medium & high silicon content aluminium alloys. Machining of titanium and composites.		

RECOMMENDED SPEEDS AND FEEDS OF PCD

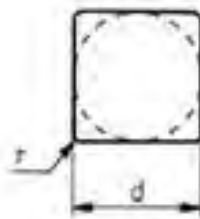
PCD Material	Speed		Feed Rate		Depth of	
	(SFM)	(M/min)	(IPR)	(mm/Rev)	cut (inch):	(millimetre)
Aluminium	3000-5000	900-1500	.005-.008	.15 - .20	.005-.020	.15-.50
Aluminium (5-8% SI)	4000-6000	1200-1800	.010-.020	.25-.50	.005-.020	.15-.50
Aluminium (8-12% SI)	3000-5000	900-1500	.005-.015	.15-.40	.005-.020	.15-.50
Aluminium (14-18% SI)	1000-3000	300-900	.002-.010	.05-.25	.003-.015	.08-.40
Copper	750-1500	220-450	.003-.008	.08-.20	.005-.020	.15-.50
Bronze	1000-1250	300-380	.003-.008	.08-.20	.005-.020	.15-.50
Brass	2000-4000	600-1200	.003-.010	.08-.25	.005-.020	.15-.50
Babbitt	800-1200	240-360	.003-.010	.08-.25	.005-.020	.15-.50
Carbon	500-1000	150-300	.005-.015	.15-.40	.005-.030	.15-.75
Glass Fiber	750-1000	200-300	.001-.010	.03-.25	.001-.002	.02-.05
Carbon Composites	500-2000	150-600	.005-.015	.15-.40	.010-.100	.25-2.50
Sintered Carbide	30-50	9-15	.004-.006	.10-.15	.0005-.005	.01-0.15
High Aluminium Ceramics	1200-2400	360-700	.001-.004	.03-.10	.0005-.005	.01-0.15
Wood & Composites	8000- 13000	2500-4000	.010-100	.25-2540	.010-.100	.25-2.50

SNGA



Type	Dimensions(mm)				Single Edge	PCD Grade		
ISO	d	t	r	D		HT010	HT302	HT850
SNGA 120402	12.70	4.76	0.2	5.16	✓	✓	✓	✓
SNGA 120404			0.4		✓	✓	✓	✓
SNGA 120408			0.8		✓	✓	✓	✓
SNGA 120412			1.2		✓	✓	✓	✓

SNGN



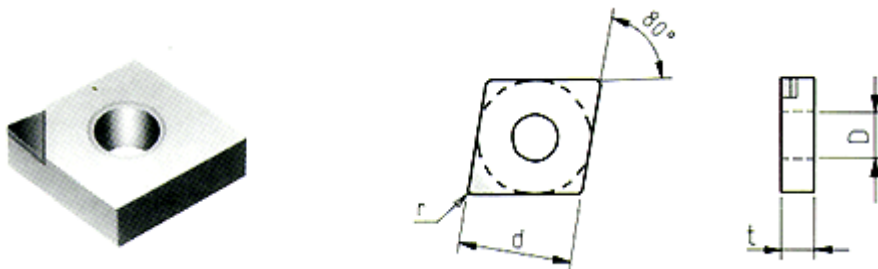
Type	Dimensions(mm)			Single Edge	PCD Grade		
ISO	d	t	r		HT010	HT302	HT850
SNGN 120404	12.70	4.76	0.4	✓	✓	✓	✓
SNGN 120408			0.8	✓	✓	✓	✓
SNGN 120412			1.2	✓	✓	✓	✓

CCMW



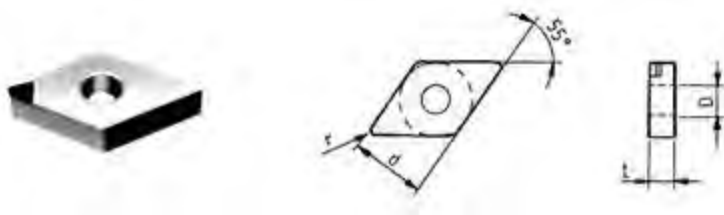
Type	Dimensions(mm)				Single Edge	PCD Grade		
ISO	d	t	r	D		HT010	HT302	HT850
CCMW 060202	6.35	2.38	0.2	2.8	✓	✓	✓	✓
CCMW 060204			0.4		✓	✓	✓	✓
CCMW 060208			0.8		✓	✓	✓	✓
CCMW 090302	9.52	3.97	0.2	4.4	✓	✓	✓	✓
CCMW 090304			0.4		✓	✓	✓	✓
CCMW 090308			0.8		✓	✓	✓	✓
CCMW 090312			1.2		✓	✓	✓	✓

CNGA



Type	Dimensions(mm)				Single Edge	PCD Grade		
ISO	d	t	r	D		HT010	HT302	HT850
CNGA 120402	12.70	4.76	0.2	5.16	✓	✓	✓	✓
CNGA 120404			0.4		✓	✓	✓	✓
CNGA 120408			0.8		✓	✓	✓	✓

DNGA



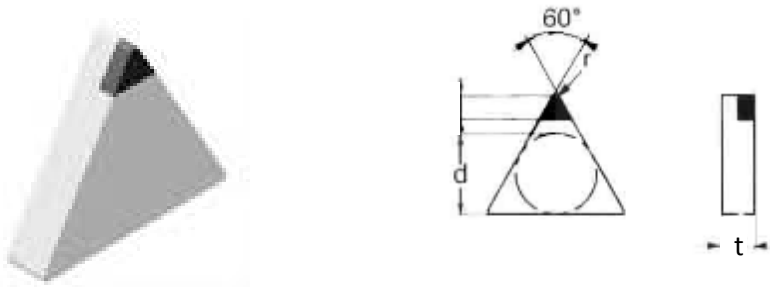
Type	Dimensions(mm)				Single Edge	PCD Grade		
ISO	d	t	r	D		HT010	HT302	HT850
DNGA 150402	12.70	4.76	0.2	5.16	✓	✓	✓	✓
DNGA 150404			0.4		✓	✓	✓	✓
DNGA 150408			0.8		✓	✓	✓	✓
DNGA 150412			1.2		✓	✓	✓	✓
DNGA 150602	12.70	6.35	0.2	5.16	✓	✓	✓	✓
DNGA 150604			0.4		✓	✓	✓	✓
DNGA 150608			0.8		✓	✓	✓	✓
DNGA 150612			1.2		✓	✓	✓	✓

TNGA

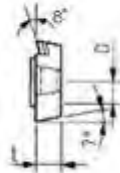


Type	Dimensions(mm)				Single Edge	PCD Grade		
ISO	d	t	r	D		HT010	HT302	HT850
TNGA 160402	9.52	4.76	0.2	4.4	✓	✓	✓	✓
TNGA 160404			0.4		✓	✓	✓	✓
TNGA 160408			0.8		✓	✓	✓	✓
TNGA 160412			1.2		✓	✓	✓	✓
TNGA 220408	12.70	4.76	0.8	5.16	✓	✓	✓	✓
TNGA 220412			1.2		✓	✓	✓	✓

TNGN



Type	Dimensions(mm)			Single Edge	PCD Grade		
ISO	d	t	r		HT010	HT302	HT850
TNGN 160402	9.52	4.76	0.2	✓	✓	✓	✓
TNGN 160404			0.4	✓	✓	✓	✓
TNGN 160408			0.8	✓	✓	✓	✓
TNGN 160412			1.2	✓	✓	✓	✓

TCMW


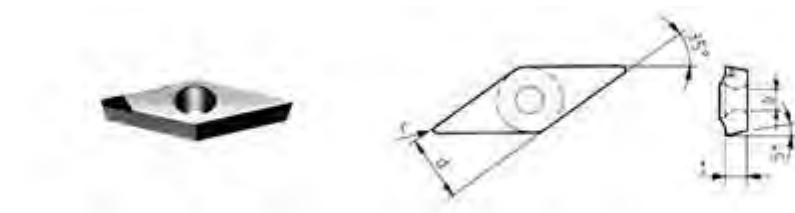
Type	Dimensions(mm)				Single Edge	PCD Grade		
ISO	d	t	r	D		HT010	HT302	HT850
TCMW 090202	5.56	2.38	0.2	2.5	✓	✓	✓	✓
TCMW 090204			0.4		✓	✓	✓	✓
TCMW 090208			0.8		✓	✓	✓	✓
TCMW 110202	6.35	2.38	0.2	2.8	✓	✓	✓	✓
TCMW 110204			0.4		✓	✓	✓	✓
TCMW 110208			0.8		✓	✓	✓	✓
TCMW 160302	9.52	3.97	0.2	4.4	✓	✓	✓	✓
TCMW 160304			0.4		✓	✓	✓	✓
TCMW 160308			0.8		✓	✓	✓	✓

VNGA



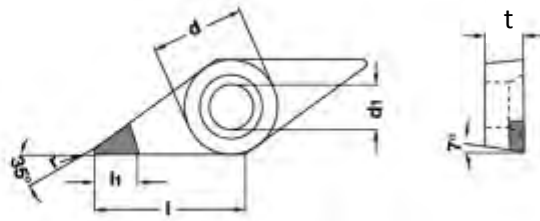
Type	Dimensions(mm)				Single Edge	PCD Grade		
ISO	d	t	R	D		HT010	HT302	HT850
VNGA160402	9.53	4.76	0.2	3.81	✓	✓	✓	✓
VNGA 160404			0.4		✓	✓	✓	✓
VNGA 160408			0.8		✓	✓	✓	✓
VNGA 160412			1.2		✓	✓	✓	✓

VBMW



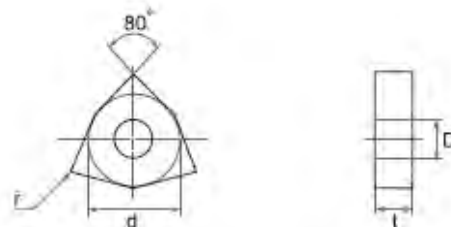
Type	Dimensions(mm)				Single Edge	PCD Grade		
ISO	d	t	r	D		HT010	HT302	HT850
VBMW 160402	9.52	4.76	0.2	4.4	✓	✓	✓	✓
VBMW 160404			0.4		✓	✓	✓	✓
VBMW 160408			0.8		✓	✓	✓	✓
VBMW 160412			1.2		✓	✓	✓	✓

VCGW

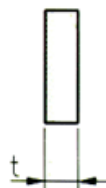
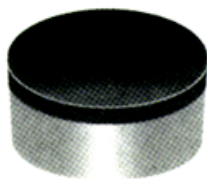


Type	Dimensions(mm)				Single Edge	PCD Grade		
ISO	d	t	r	d1		HT010	HT302	HT850
VCGW 160402	9.52	4.76	0.2	4.4	✓	✓	✓	✓
VCGW 160404			0.4		✓	✓	✓	✓
VCGW 160408			0.8		✓	✓	✓	✓
VCGW 160412			1.2		✓	✓	✓	✓

WNGA

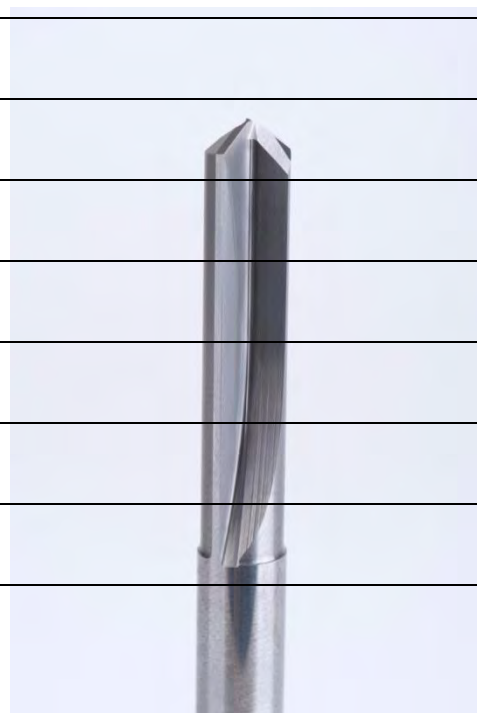


Type	Dimensions(mm)				Single Edge	PCD Grade		
ISO	D	T	r	D		HT010	HT302	HT850
WNGA 060404	9.52	4.76	0.2	3.81	✓	✓	✓	✓
WNGA 060408			0.8		✓	✓	✓	✓
WNGA 060412			1.2		✓	✓	✓	✓
WNGA 080404	12.70	4.76	0.2	5.16	✓	✓	✓	✓
WNGA 080408			0.8		✓	✓	✓	✓
WNGA 080412			1.2		✓	✓	✓	✓

RNGN


Type ISO	Dimensions(mm)		Solid Top	PCD Grade		
	d	t		HT010	HT302	HT850
RNGN 060300	6.35	3.18	✓	✓	✓	✓
RNGN 090300	9.52	3.18	✓	✓	✓	✓
RNGN 120300	12.70	3.18	✓	✓	✓	✓

PCD NOTES:



Polycrystalline Cubic Boron Nitride – PCBN

PCBN (POLYCRYSTALLINE CUBIC BORON NITRIDE)

Howick Tooling – PCBN inserts are significantly harder and have a high degree of toughness, exceptional hot hardness and are abrasion resistant. Other desirable characteristics of the Howick Tooling - PCBN inserts include strength, thermal and chemical resistance as well as their ability to maintain sharp cutting edges.

They are designed to machine ferrous materials in the 40 HRC to 70 HRC range, chilled and gray cast irons.

HOWICK TOOLING - PCBN CHARACTERISTICS & ADVANTAGES

Howick Tooling – PCBN inserts

✓ Ensure strength & an improved surface finish	✓ Are abrasion resistance	✓ Higher productivity
✓ Thermal and chemical resistance	✓ Maintain sharp cutting edges during use	✓ Maintains hardness over a wide temperature range
✓ Suitable for machining ferrous materials	✓ Harder at ambient temperature	✓ A must have for mass production grinding operations
✓ Longer tool life compared to conventional abrasives	✓ Single Edge inserts are very cost effective	

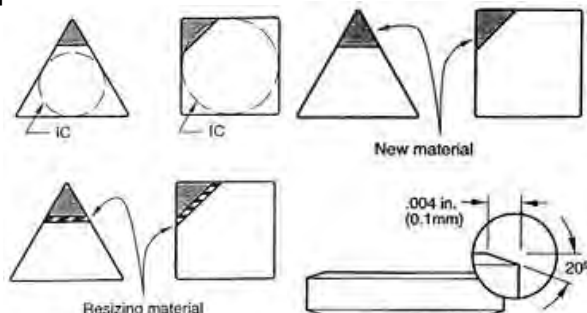
PCBN ADVANTAGES VERSUS CARBIDE

- | | |
|------------------------------|------------------------------|
| ✓ Reduced energy consumption | ✓ Higher metal removal rates |
| ✓ Reduced machining times | ✓ Improved quality |
| ✓ Increased edge toughness | ✓ Increased tool life |
| ✓ Increased consistency | ✓ Reduced tool changes |

PCBN SERVICES OFFERED

We offer a range of PCD & PCBN services please refer to the PCD section for more information on the services provided.

CLASS 1 – RELAP
CLASS 2 - SHIM AND RELAP
CLASS 3 – RETIP
EDGE PREPARATION



PCBN (POLYCRYSTALLINE CUBIC BORON NITRIDE)

Howick Tooling - PCBN inserts are supplied for all turning, boring and milling applications and we offer three groups:

- ✓ BRAZED TIPPED PCBN tools and inserts, single or multi edged
- ✓ SOLID INSERTS with PCBN in a ceramic binder throughout the insert or
- ✓ FULL FACE 0.8mm thick layer on a carbide substrate.

PCBN RECOMMENDED USE

Howick Tooling - PCBN tipped tools are harder at ambient temperatures and maintain this hardness over wide temperature range. They are recommended on the following materials:

Materials recommended for cutting with CBN

Carbon Steel	High Tensile Cast Iron	Rene 41	Colmonoy
Bearing Steel	Chilled Cast Iron	Rene77	Waspoly
Alloy Steel	Grey Cast Iron	Incoloy	
Die Steel	Powdered Metal	Monel	
Tool Steel	Inconel	Stellite	

PCBN GRADES

PCBN inserts are available in several grades for specific properties and usage.

PCBN Grade Low Content CBN grain

Use for finishing cuts on Hardened Steel the required grade largely depends on the hardness of the steel.
We recommend:

<u>Grade Name</u>	<u>HT55</u>	<u>HT65</u>
Use For	Steel hardness up to 65 RC	For Hardened Steel up to 56 RC

PCBN Grade High Content CBN grain

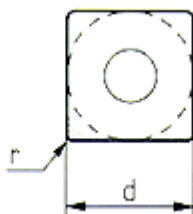
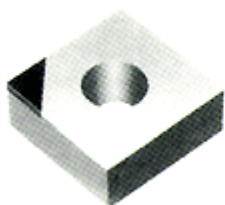
Use for Machining Cast Iron, hard facing material and Nickel Alloys

<u>Grade Name</u>	<u>HT90</u>	<u>HT95</u>
Use For	Continuous to heavily interrupted applications	Continuous to slightly interrupted cutting

RECOMMENDED SPEEDS AND FEEDS OF PCBN

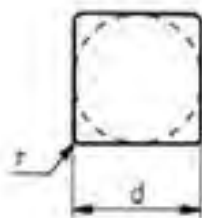
PCBN Material	Speed (SFM)	(M/min)	Feed Rate (IPR)	(mm/Rev)	Depth of cut (inch):	(millimetre)
Carbon Steel	200-500	60-150	.012 MAX	.30 Max	.060 MAX.	1.50 Max
Bearing Steel	200-500	60-150	.012 MAX	.30 Max	.060 MAX.	1.50 Max
Alloy Steel	200-500	60-150	.012 MAX	.30 Max	.060 MAX.	1.50 Max
Die Steel	160-350	50-100	.012 MAX	.30 Max	.060 MAX.	1.50 Max
Tool Steel	160-350	50-100	.012 MAX	.30 Max	.060 MAX.	1.50 Max
High Tensile Cast Iron	200-500	60-150	.060 MAX.	1.50 Max	.100 MAX.	2.50 Max
Chilled Cast Iron	260-500	80-150	.012 MAX.	.30 Max	.080 MAX.	2.00 Max
Grey Cast Iron	1600-4000	500-1200	.012 MAX.	.30 Max	.080 MAX.	2.00 Max
Powdered Metal	500-650	150-200	.016 MAX.	.41 Max	.120 MAX.	3.00 Max
Inconel	500-650	150-200	.006 MAX.	.15 Max	.125 MAX.	3.00 Max
Rene 41	500-650	150-200	.006 MAX.	.15 Max	.125 MAX.	3.00 Max
Rene77	450-550	130-160	.006 MAX.	.15 Max	.015 MAX.	.40 Max
Incoloy	750-900	200-280	.006 MAX.	.15 Max	.125 MAX.	3.00 Max
Monel	550-650	150-200	.006 MAX.	.15 Max	.125 MAX.	3.00 Max
Stellite	550 -650	150-200	.006 MAX.	.15 Max	.125 MAX.	3.00 Max
Colmonoy	550-650	150-200	.003 MAX.	.008 Max	.125 MAX.	3.00 Max
Waspoly	550-650	150-200	.003 MAX.	.008 Max	.060 MAX.	1.50 Max

SNGA



Type	Dimensions(mm)				Single Edge	Multi Edge	PCBN Grade			
ISO	d	t	r	D			HT45	HT55	HT90	HT95
SNGA 120402	12.70	4.76	0.2	5.16	✓	✓	✓	✓	✓	✓
SNGA 120404			0.4		✓	✓	✓	✓	✓	✓
SNGA 120408			0.8		✓	✓	✓	✓	✓	✓
SNGA 120412			1.2		✓	✓	✓	✓	✓	✓

SNGN



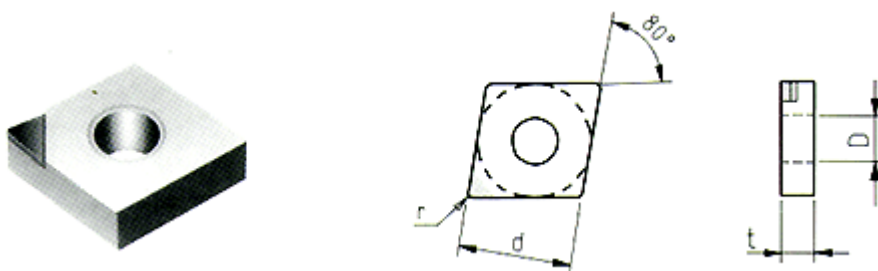
Type	Dimensions(mm)			Single Edge	Multi Edge	PCBN Grade			
ISO	d	t	r			HT45	HT55	HT90	HT95
SNGN 120404	12.70	4.76	0.4	✓	✓	✓	✓	✓	✓
SNGN 120408			0.8	✓	✓	✓	✓	✓	✓

CCMW



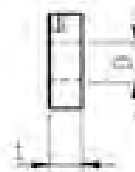
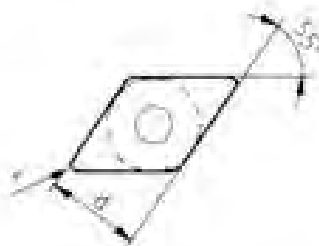
Type	Dimensions(mm)				Single Edge	Multi Edge	PCBN Grade			
ISO	d	t	r	D			HT45	HT55	HT90	HT95
CCMW 060202	6.35	2.38	0.2	2.8	✓	✓	✓	✓	✓	✓
CCMW 060204			0.4		✓	✓	✓	✓	✓	✓
CCMW 060208			0.8		✓	✓	✓	✓	✓	✓
CCMW 090302	9.52	3.97	0.2	4.4	✓	✓	✓	✓	✓	✓
CCMW 090304			0.4		✓	✓	✓	✓	✓	✓
CCMW 090308			0.8		✓	✓	✓	✓	✓	✓
CCMW 090312			1.2		✓	✓	✓	✓	✓	✓

CNGA



Type	Dimensions(mm)				Single Edge	Multi Edge	PCBN Grade			
ISO	d	t	r	D			HT45	HT55	HT90	HT95
CNGA 120402	12.70	4.76	0.2	5.16	✓	✓	✓	✓	✓	✓
CNGA 120404			0.4		✓	✓	✓	✓	✓	✓
CNGA 120408			0.8		✓	✓	✓	✓	✓	✓
CNGA 120412			1.2		✓	✓	✓	✓	✓	✓

DNGA



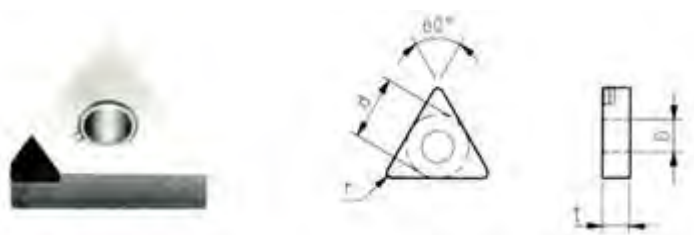
Type	Dimensions(mm)				Single Edge	Multi Edge	PCBN Grade			
ISO	d	t	r	D			HT45	HT55	HT90	HT95
DNGA 150402	12.70	4.76	0.2	5.16	✓	✓	✓	✓	✓	✓
DNGA 150404			0.4		✓	✓	✓	✓	✓	✓
DNGA 150408			0.8		✓	✓	✓	✓	✓	✓
DNGA 150412			1.2		✓	✓	✓	✓	✓	✓
DNGA 150602	12.70	6.35	0.2	5.16	✓	✓	✓	✓	✓	✓
DNGA 150604			0.4		✓	✓	✓	✓	✓	✓
DNGA 150608			0.8		✓	✓	✓	✓	✓	✓
DNGA 150612			1.2		✓	✓	✓	✓	✓	✓

DCMW



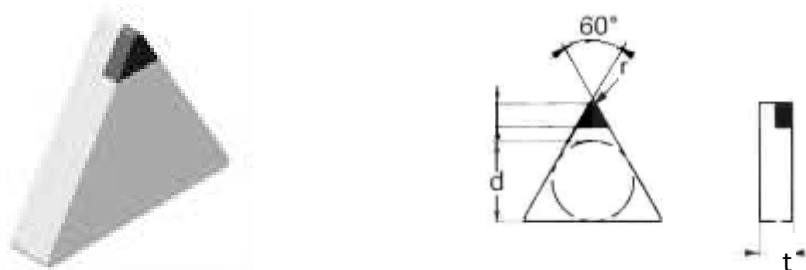
Type	Dimensions(mm)				Single Edge	Multi Edge	PCBN Grade			
ISO	d	t	r	D			HT45	HT55	HT90	HT95
DCMW 070202	6.35	2.38	0.2	2.8	✓	✓	✓	✓	✓	✓
DCMW 070204			0.4		✓	✓	✓	✓	✓	✓
DCMW 070208			0.8		✓	✓	✓	✓	✓	✓
DCMW 110302	9.52	3.18	0.2	4.4	✓	✓	✓	✓	✓	✓
DCMW 110304			0.4		✓	✓	✓	✓	✓	✓
DCMW 110308			0.8		✓	✓	✓	✓	✓	✓

TNGA



Type	Dimensions(mm)				Single Edge	Multi Edge	PCBN Grade			
ISO	d	t	r	D			HT45	HT55	HT90	HT95
TNGA 160402	9.52	4.76	0.2	4.4	✓	✓	✓	✓	✓	✓
TNGA 160404			0.4		✓	✓	✓	✓	✓	✓
TNGA 160408			0.8		✓	✓	✓	✓	✓	✓
TNGA 160412			1.2		✓	✓	✓	✓	✓	✓
TNGA 220408	12.70	4.76	0.8	5.16	✓	✓	✓	✓	✓	✓
TNGA 220412			1.2		✓	✓	✓	✓	✓	✓

TNGN



Type	Dimensions(mm)				Single Edge	Multi Edge	PCBN Grade			
ISO	d	t	r	D			HT45	HT55	HT90	HT95
TNGN 160402	9.52	4.76	0.2	5.16	✓	✓	✓	✓	✓	✓
TNGN 160404			0.4		✓	✓	✓	✓	✓	✓
TNGN 160408			0.8		✓	✓	✓	✓	✓	✓
TNGN 160412			1.2		✓	✓	✓	✓	✓	✓

TCMW



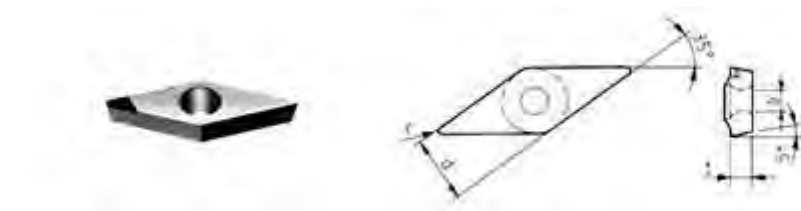
Type	Dimensions(mm)				Single Edge	Multi Edge	PCBN Grade			
ISO	d	t	r	D			HT45	HT55	HT90	HT95
TCMW 090202	5.56	2.38	0.2	2.5	✓	✓	✓	✓	✓	✓
TCMW 090204			0.4		✓	✓	✓	✓	✓	✓
TCMW 090208			0.8		✓	✓	✓	✓	✓	✓
TCMW 110202	6.35	2.38	0.2	2.8	✓	✓	✓	✓	✓	✓
TCMW 110204			0.4		✓	✓	✓	✓	✓	✓
TCMW 110208			0.8		✓	✓	✓	✓	✓	✓
TCMW 160302	9.52	3.97	0.2	4.4	✓	✓	✓	✓	✓	✓
TCMW 160304			0.4		✓	✓	✓	✓	✓	✓
TCMW 160308			0.8		✓	✓	✓	✓	✓	✓

VNGA



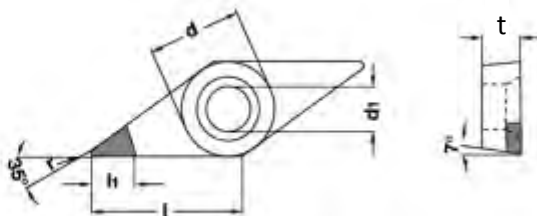
Type	Dimensions(mm)				Single Edge	Multi Edge	PCBN Grade			
ISO	d	t	r	D			HT45	HT55	HT90	HT95
VNGA160402	9.53	4.76	0.2	3.81	✓	✓	✓	✓	✓	✓
VNGA 160404			0.4		✓	✓	✓	✓	✓	✓
VNGA 160408			0.8		✓	✓	✓	✓	✓	✓
VNGA 160412			1.2		✓	✓	✓	✓	✓	✓

VBMW



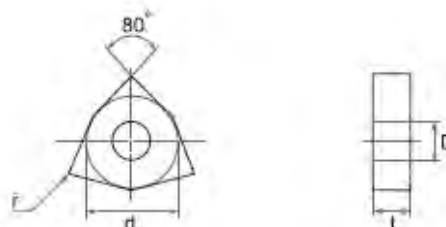
Type	Dimensions(mm)				Single Edge	Multi Edge	PCBN Grade			
ISO	d	t	r	D			HT45	HT55	HT90	HT95
VBMW 160402	9.52	4.76	0.2	4.4	✓	✓	✓	✓	✓	✓
VBMW 160404			0.4		✓	✓	✓	✓	✓	✓
VBMW 160408			0.8		✓	✓	✓	✓	✓	✓
VBMW 160412			1.2		✓	✓	✓	✓	✓	✓

VCGW



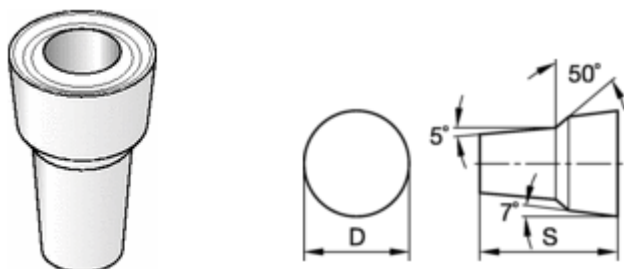
Type	Dimensions(mm)				Single Edge	Multi Edge	PCBN Grade			
ISO	d	t	r	d1			HT45	HT55	HT90	HT95
VCGW 160402	9.52	4.76	0.2	4.4	✓	✓	✓	✓	✓	✓
VCGW 160404			0.4		✓	✓	✓	✓	✓	✓
VCGW 160408			0.8		✓	✓	✓	✓	✓	✓
VCGW 160412			1.2		✓	✓	✓	✓	✓	✓

WNGA



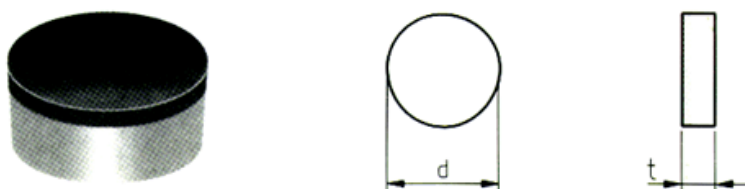
Type	Dimensions(mm)				Single Edge	Multi Edge	PCBN Grade			
ISO	d	t	r	D			HT45	HT55	HT90	HT95
WNGA 080404	12.70	4.76	0.2	5.16	✓	✓	✓	✓	✓	✓
WNGA 080408			0.8		✓	✓	✓	✓	✓	✓
WNGA 080412			1.2		✓	✓	✓	✓	✓	✓

RCMK



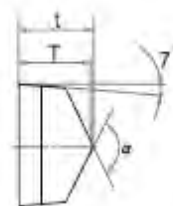
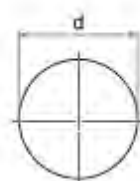
Type	Dimensions(mm)		PCBN Grade			
	d	S	HT45	HT55	HT90	HT95
RCMK 060400	6.35	9.09	✓	✓	✓	✓
RCMK 090700	9.52	13.3	✓	✓	✓	✓
RCMK 120800	12.7	16.6	✓	✓	✓	✓

RNGN



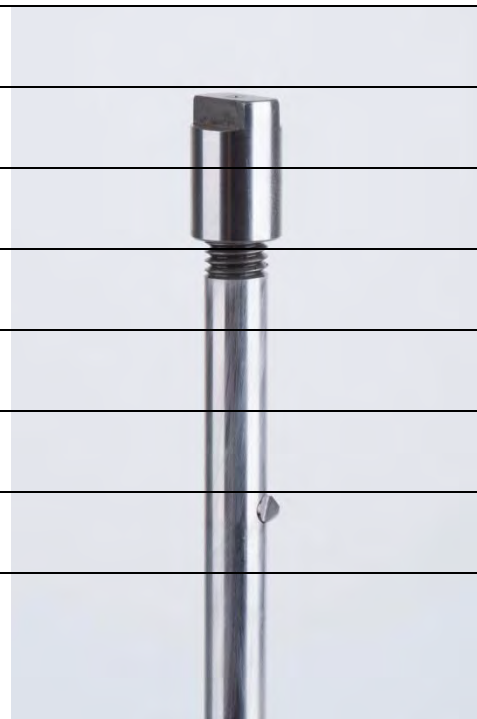
Type	Dimensions(mm)		PCBN Grade			
	d	t	HT45	HT55	HT90	HT95
RNGN 060300	6.35	3.18	✓	✓	✓	✓
RNGN 090300	9.52	3.18	✓	✓	✓	✓
RNGN 120300	12.70	3.18	✓	✓	✓	✓

RCGX



Type ISO	Dimensions(mm)		PCBN Grade			
	d	t	HT45	HT55	HT90	HT95
RCGX 060300	6.35	3.18	✓	✓	✓	✓
RCGX 090300	9.52	3.18	✓	✓	✓	✓
RCGX 120400	12.70	4.76	✓	✓	✓	✓
RCGX 060600	6.35	6.35	✓	✓	✓	✓
RCGX 090700	9.52	7.94	✓	✓	✓	✓
RCGX 120700	12.70	7.94	✓	✓	✓	✓
RCGX 151000	15.87	10.00	✓	✓	✓	✓

PCBN NOTES:

[illegible]

Notching Machine Tooling Supplies

Formtool New Zealand was established 40 years ago and manufactures notching machine tooling supplies. We supply Arbor Tool Holders, PCD&PCBN, Ceramic and Tungsten Carbide Tips and other equipment associated with re-bar manufacturing.

HOWICK TOOLING - We attribute our success to:

- ✓ The quality of PCD, PCBN and Carbide which we import from Europe
- ✓ Our tool holders are made out of quality case hardened material
- ✓ Experienced trade - staff and specialised manufacturing methods
- ✓ Manufacturing to our clients requirements within tolerance to our clients expectations
- ✓ Our ability to manufacture any quantity from prototypes to large production runs
- ✓ Making tools which last, first time and every time





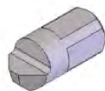


ARBOR TOOL HOLDERS

We make arbor tool holders for Atomat, Shin-il, Herkules and other re-bar notching machines. Made from high grade steel for superior wear resistance and longer tool life. We are also able to design or alter tool holders to your specifications



EXTRACT OF PRODUCT RANGE PROVIDED

Tool Holders and Inserts

Atomat			Shin – il					
Tool Holder Base	Composite Arbor Size 8-25	Tool Holder Solid Size 8-40	Tool Holder Base	Composite Arbor Size 8-25	Tool Holder Solid Size 8-40	TC Insert Tips Size 8-40	Steel Support Pad	Bronze Support Pad
								

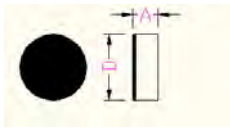
NOTCHING TOOLS / CARBIDE TIPS


Manufacture and supply of notching tools for re-bar notching machines. We can grind your specific profile on both round and square tool stock.




INSERT SELECTION FOR TURNING CAST IRON ROLLS

All inserts are manufactured with standard "k-land" or as requested

	Type ISO	Type ANSI	D	A	HT90	HT95
	RNGN060300	RNGN22	6.35	3.18	✓	✓
	RNGN090300	RNGN32	9.52	3.18	✓	✓
	RNGN120300	RNGN42	12.7	3.18	✓	✓
	RNGN060400	RNGN23	6.35	4.76	✓	✓
	RNGN090400	RNGN33	9.52	4.76	✓	✓
	RNGN120400	RNGN43	9.52	4.76	✓	✓

	RPGX060600	RCGX24	6.35	6.35	✓	✓
	RPGX090700	RCGX44	9.52	7.94	✓	✓
	RPGX120700	RCGX45	12.7	7.94	✓	✓

	RCGX060600	RCGX24	6.35	6.35	✓	✓
	RCGX090700	RCGX44	9.52	7.94	✓	✓
	RCGX120700	RCGX45	12.7	7.94	✓	✓

We also manufacture other ISO Inserts with PCBN & PCD as requested, and we provide matching Tool Holders for the Inserts.



STELL MILL - MATERIAL GRADES

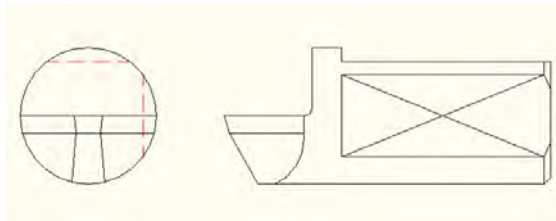
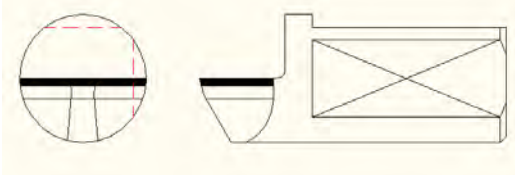
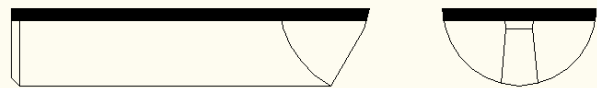
For Cast Iron, HSS Rolls & Carbide Rolls, Turning and Notching Tools

Material	Grades	Specifics	Used for
Carbide	K01	1 Micron grain	General notching of Cast Iron rolls and HSS rolls
	UF10	Sub Micron grain	For more harder notching rolls
PCBN	HT90	90% CBN	Good for heavy interrupted cutting of hard materials and notching carbide rolls
	HT95	95% CBN	Excels in interrupted machining of grey and hard cast irons
PCD	HT010	10 Micron grain	Ideal grade where roughing and finishing are preformed
	HT025	25 Micron grain	Optimum wear resistance slightly coarser finish
Ceramic	650		Light continuous cutting
	6060		High security and predictable wear

WE MANUFACTURE CARBIDE, PCD & PCBN NOTCHING INSERTS TO YOUR SPECIFICATION.

STYLES OF NOTCHING TOOLS

- ✓ Half Diameter Full Face
- ✓ PCBN & PCD
- ✓ Braised insert
- ✓ PCBN & PCD
- ✓ Solid carbide insert

**Braised Insert****Half Diameter Full Face****RESHARPING SERVICE**

Formtool can sharpen your PCD & PCBN Notching Inserts reducing the cost of purchasing new inserts.

Formtool Precision Engineering

We proudly manufacture tooling under the Howick Tooling Brand and distinguish ourselves from other manufacturers by:

Howick Tooling – Quality Made in New Zealand

- ✓ Providing high precision tooling solutions for the steel mill industry around the world.
 - ✓ Supplying cutting tools made out of 01 grade carbide bar imported from Europe
 - ✓ Following exact quality controls throughout the manufacturing process
 - ✓ Utilising specialised grinding methods for superior results
 - ✓ Using CNC machines for a high accuracy finish
-

Formtool Precision also stocks guide rolls and accessories for Automat and Shin-il notching machines. With our well-equipped manufacturing plant combined with skilled staff, you will get tooling that will not let you down. While our reputation is built on supplying top quality tooling we are also competitive on price. Send us your detailed drawings and the quantity required for a free quote.

MIDDLE EAST CONTACT

Please contact our Agent in the Middle East to deal locally in the Middle East.

Desert Business Wind FZCO

Jafza 15 245, P.O.Box 18578, Jebel Ali, Dubai, U.A.E.

Phone: +971 4 8810445

Email: customercare@dbw.ae Web: www.dbw.ae



TESTIMONIALS

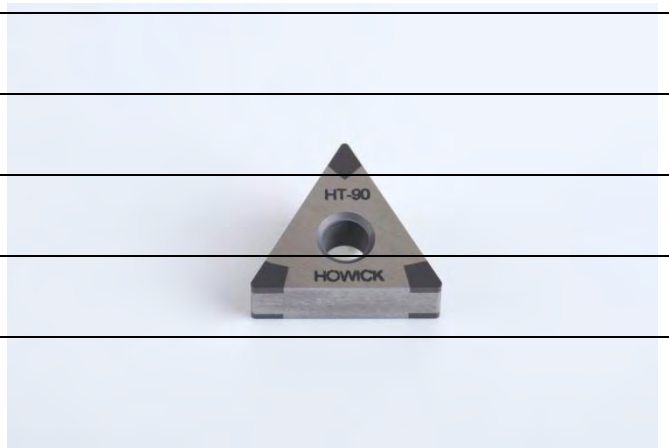
“Formtools Notching tool bits last more than 30% longer and have far less edge breakages than other competitors on the market we have tried. Their composite arbors and tool arbors are made out of more wear resistant steel which gives them a longer life span of over 50% over other competitors resulting in higher efficiency and real cost savings for us.”

Date of Posting: 10 March 2011

Posted By: Louis Twyman, Pacific Steel, www.pacificsteel.co.nz

Further testimonials can be provided on enquiry.

STEEL MILL NOTES:



Contact Details



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Email: customercare@dbw.ae

Web: www.dbw.ae

Manufacturers of Products

PCD & PCBN Tooling - Inserts, Milling Cutters & Special Tooling

Steel Mill Tooling Supplies - Notching Inserts, Engraving Tools, Tool Arbours,
Turning Tools & Tool Holders

HSS, Tungsten Carbide Tooling - Formtools & Formdrills

Precision Components & Machine Parts