

BD Drill

Carbide Inserts

www.bddrill.us



BD Drill **Black Diamond Drilling Tools USA Inc.**

Add: 131 Daniel Webster Hwy, #426 Nashua, NH 03060 Tel: 1 978-319-8000 www.bddrill.us

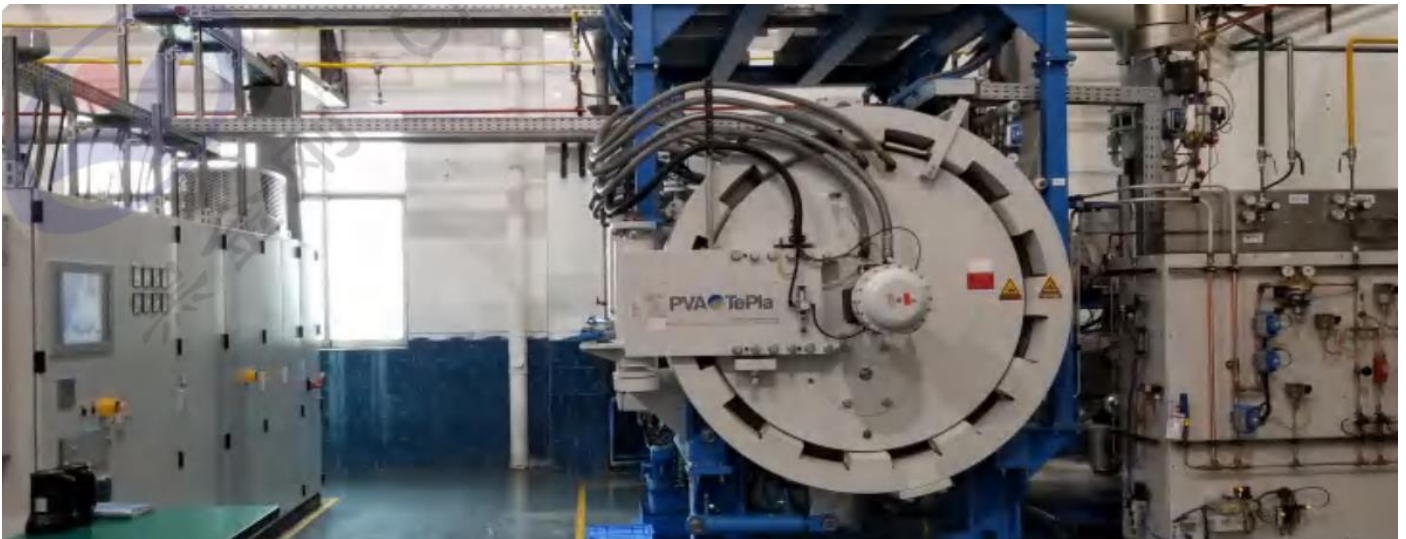
About our manufacturing process



Spiral spray drying tower – with 300 litre volume the Spiral spray drying tower makes slurry drying complete with uniform density and perfect fluidity. The quality of the tower guarantees consistent grain inside of the matrix and stability of performance for every blade created.

Pressure Sintered Furnace – Semifinished cemented carbide blades are sintered to form by the Pressure Sintered Furnace to ensure range of cobalt magnetization within 0.3, range of magnetic force within 0.5, range of cobalt magnetization controlled within 0.5, and magnetic force within 0.8 in different batches of production.

The diversity is minimal in different batches and that maintains the quality variation is the smallest, thus increasing the performance lifespan in each batch of products. The maximum pressure of the furnace is 10Mpa that will meet any requirement for pressure in different grain size of cemented carbide products.



Osterwalder Electric Press – The imported electric press with 3R fast clamping system, and uniform powder mixture sprayer ensures the highest accuracy in each piece of CNC inserts. With a focus on ensuring a stable life time of CNC inserts, the precision requirements of each product is also guaranteed.



SOCOTEC CVD Coating Furnace – The imported Swiss made SUCOTEC CVD coating furnace has the advantages of stability coating process, thickness of the coating layer is thick, uniform and the adhesion is strong. The blade edge has stronger impact toughness and higher wear resistance with the CVD coating increasing its durability.



Oerlikon Balzers PVD Furnace – The PVD furnace is the most advanced in the world. The advantages of this furnace are that the coating layer adhesion is the strongest, the thickness of the coating layer is uniform, and the coating process results in the most stable and durable PVD coating possible. This technically advanced equipment makes it possible to produce the highest volume of products and also the most uniform product quality.

Introduction of turning material

7215 - One matrix with high strength, toughness and high wear-resisting, excellent combination of coating process with MT—TiCN, thick AL2O₃, TiN and removed interior stress in layer after the advanced coating further. It is suitable for ordinary steel finish machining.

7125 - The good safety edge of blade with high strength and flexible matrix combine with coating process of MT—TiCN ' s super—thick AL2O₃ and removed interior stress in layer after the advanced coating further. It is suitable for ordinary steel rough machining, semi-finish machining and some of workpiece has no high requirement on its roughness.

4025 - With high wear resistance made by sintered process with a certain pressure and high strength matrix a great combination with MT—TiCN and super—thick AL2O₃, and with advanced coating following process to get a smoothly coating surface. It is suitable for rough machining in cast iron, semi—finish machining and finish machining.

1030 - Fine grain, perfect non—deformability and super high strength and wear resistance matrix that made by pressure sintered process, with nanometre PVD coating process and advanced following coating process to get a smoothly coating surface. It is suitable for ordinary steel' s finish machining, quenched steel, Chromium—plated steel and stainless steel' s semi and finish machining.

1120 - Ultrafine grain, perfect non—deformability and super high strength and wear resistance matrix that made by pressure sintered process, with nanometre Si included PVD coating process and advanced following coating process to get a smoothly coating surface. It is suitable for ordinary steel' s finish machining, quenched steel, cast—iron grooving and cut off machining.

Milling Drilling Material Introduction

1030 - NC—TiAlN coating combination with a fine grain and high strength matrix suitable for all kinds of workpiece in rough, semi—finish milling, grooving, cutting off and drilling of normal diameter of hole.

1130 - Si included NC—TiAlN coating combined with fine grain and good toughness cemented carbide matrix suitable for stainless steel, cast—iron' s rough milling and semi—finish milling getting a wonderful combination in safety and wear—resistance.

5035 - CVD coating with added elements of wear—resistance and high temperature resistance to provide an effective protection for cutting edge with its high hardness of coating layer and excellent high temperature resistance. Special coating technology to ensure the connection between coating and matrix getting more stronger suitable for precision milling in high temperature alloy steel, Titanium alloy steel.

5135 - Containing element Si the coating of NC—TiAlN combine with cemented carbide matrix with its good impact toughness, suitable for steel workpiece, stainless steel, grooving, cutting in depth, fasting feeding and bigger size of hole drilling.

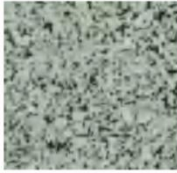
Grade Of Cemented Carbide



7251
Substrate - Medium grain size, bonding with hard phase of WC, TiC, TaNbC and bonding phase Co.



7225
Substrate - Medium coarse grain size, bonding with hard phase of WC, TiC, TaNbC and bonding phase Co.



5135
Substrate - Medium fine grain size, bonding with hard phase of WC, TiC, TaNbC and added bonding phase of rare-earth metal Co.



1030
Substrate - Fine grain size, added Cr hard phase WC and bonding with bonding phase Co.

Grade of Carbide Insert

Turning Insert	 CNMG	 DNMG	 SNMG		
	 TNMG	 VNMG	 WNMG	 TNMX	 CCMT
	 DCMT	 RCMX	 SCMT	 TCMT	 VBMT
Grooving cutting blade	 MGMN				
	Milling blade		 APMT	 LNMU	
 RPMT	 SEKR	 WNMU	 SNMX	Standard orifice processing blade	
 SPMG	 WCMX	 WDXT			



The grade and groove shape of carbide insert can be customised according to clients' needs.

Testing Report of Blade Performance Comparison

Purpose of Testing: Comparison of overall performance of the blade and optimisation of the blade material.

Summary of Blades tested:

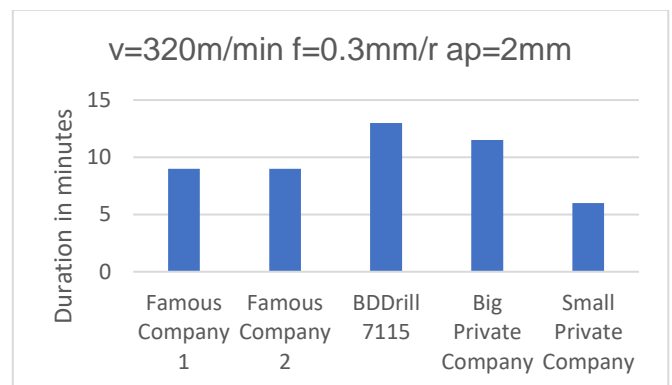
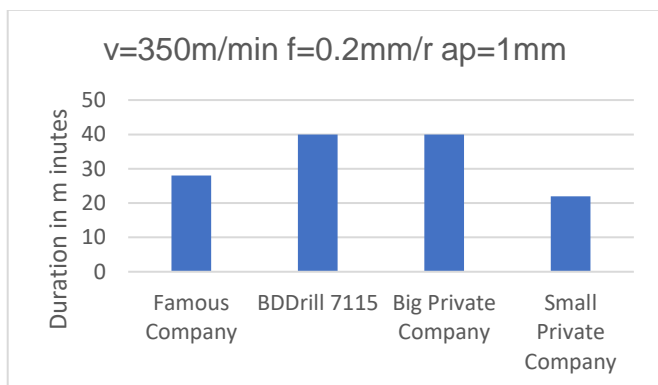
7115 Black Diamond Drilling
Blade from Large Private Company
Blade from Small Private Company
Blade from Famous Brand
Blade from another Famous Brand

Cutting Tools: DWLNL3225P08
Cutting Material: #45 Steel
Cutting Parameters: 1. $V=350\text{m/min}$ $f=0.2\text{mm/z}$ $a_p=1\text{mm}$
2. $V=320\text{m/min}$ $f=0.3\text{mm/z}$ $a_p=2\text{mm}$


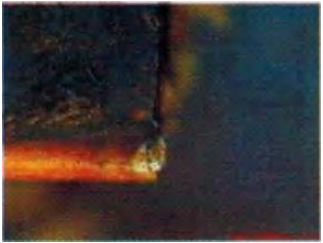







Cooling Conditions: None

Result of Testing: Under identical working conditions, no blade had abnormal failure. The cutting process was stable, and the result of the life span test was deemed reliable.



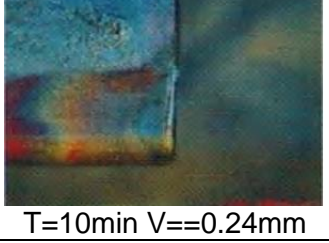
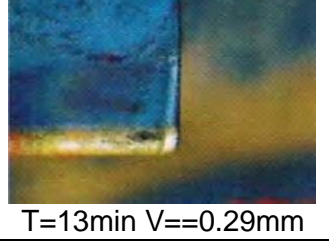
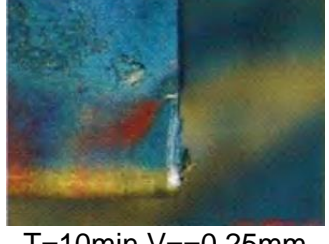

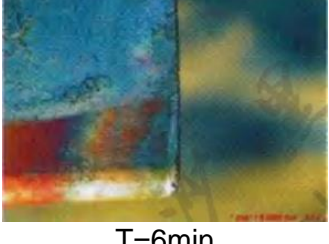
The results show that Black Diamond Drilling's 7115 blade has the best overall performance, the large private company also had a satisfactory result. The 2 famous brands have unsatisfactory results showing premature wear. The small private company had the worst result as seen in the data below.



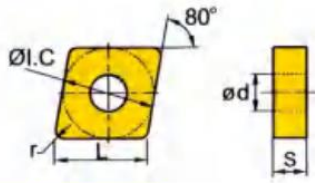
Failure morphology and wear process under cutting parameter 1

<p>YB6**5</p>	 <p>T=20min V==0.204mm</p>	 <p>T=28min</p>	
<p>7115</p>	 <p>T=20min V==0.146mm</p>	 <p>T=30min V==0.164mm</p>	 <p>T=40min V==0.209mm</p>
<p>Big Private Company</p>	 <p>T=20min V==0.146mm</p>	 <p>T=30min V==0.164mm</p>	 <p>T=40min V==0.209mm</p>
<p>Small private Company</p>	 <p>T=22min</p>		

Failure morphology and wear process under cutting parameter 2

<p>YB6**5</p>	 <p>T=9min</p>		
<p>Y*C1*2</p>	 <p>T=9min</p>		
<p>7115</p>	 <p>T=10min V==0.24mm</p>	 <p>T=13min V==0.29mm</p>	
<p>Big Private Company</p>	 <p>T=10min V==0.25mm</p>	 <p>T=11.5min</p>	
<p>Small private Company</p>	 <p>T=6min</p>		

Turning Blade - CNMG



CNMG



Stable Cutting - ★

General Cutting - ☆

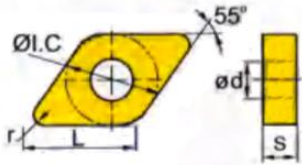
Unstable Cutting - ◆

Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆		
Stainless Steel	★	★	★	★									☆	☆	
Cast Iron	★	★	★	★										☆	☆
Nonferrous metals															
Abrasion resistant, Titanium alloy	★	★	★	★									☆	☆	

Inserts Shape	Type	Dimensions (mm)				Grade for Choice																
		Ø I.C	S	Ø d	R	1020	1120	1130	1130	715	725	725	725	725	725	725	725	503	513	402	402	
	CNMG120404-SPM	12.7	4.76	5.16	0.4					●	●	●	▲	▲	●	●						●
	CNMG120408-SPM	12.7	4.76	5.16	0.8					●	●	●	▲	▲	●	●						●
	CNMG120412-SPM	12.7	4.76	5.16	1.2					●	●	●	▲	▲	●	●						●
	CNMG160608-SPM	15.875	6.35	6.35	0.8					●	●	●	▲	▲	●	●						●
	CNMG160612-SPM	15.875	6.35	6.35	1.2					●	●	●	▲	▲	●	●						●
	CNMG190608-SPM	19.05	6.35	7.93	0.8								▲	▲	●	●						●
	CNMG190612-SPM	19.05	6.35	7.93	1.2								▲	▲	●	●						●
	CNMG190616-SPM	19.0	6.35	7.93	1.6								▲	▲	●	●						●
	CNMG120404-SPF	12.7	4.76	5.16	0.4					▲	▲	●	●	●	●							
	CNMG120404-SPF	12.7	4.76	5.16	0.8					▲	▲	●	●	●	●							
	CNMG120404-SPF	12.7	4.76	5.16	1.2					▲	▲	●	●	●	●							
	CNMG120404R/L-SS	12.7	4.76	5.16	0.4			●	●			▲	▲	●	●	●					●	
	CNMG120408R/L-SS	12.7	4.76	5.16	0.8			●	●			▲	▲	●	●	●					●	
	CNMG120412R/L-SS	12.7	4.76	5.16	1.2			●	●			▲	▲	●	●	●					●	
	CNMG120404-TH	12.7	4.76	5.16	0.4					●	●	●	▲	▲	●						▲	
	CNMG120404-TH	12.7	4.76	5.16	0.8					●	●	●	▲	▲	●						▲	
	CNMG120404-TH	12.7	4.76	5.16	1.2					●	●	●	▲	▲	●						▲	

▲ Recommended Grade (Stock always available) ● Made to Order

Turning Blade - DNMG



DNMG



Stable Cutting - ★

General Cutting - ☆

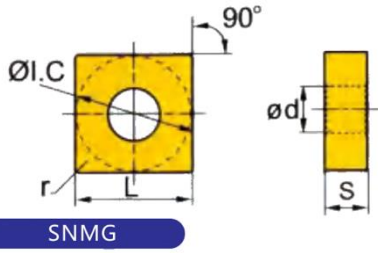
Unstable Cutting - ◆

Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆		
Stainless Steel	★	★	★	★									☆	☆	
Cast Iron	★	★	★	★										☆	☆
Nonferrous metals															
Abrasion resistant, Titanium alloy	★	★	★	★									☆	☆	

Inserts Shape	Type	Dimensions (mm)				Grade for Choice															
		Ø I.C	S	Ø d	R	1020	1120	1130	1130	715	725	725	725	725	725	725	503	513	402	402	
	DNMG110404-STM	9.525	4.76	3.81	0.4					●	●	●	▲	▲	●	●					●
	DNMG110408-STM	9.525	4.76	3.81	0.8					●	●	●	▲	▲	●	●					●
	DNMG150404-STM	12.7	4.76	5.16	0.4					●	●	●	▲	▲	●	●					●
	DNMG150408-STM	12.7	4.76	5.16	0.8					●	●	●	▲	▲	●	●					●
	DNMG150412-STM	12.7	4.76	5.16	1.2					●	●	●	▲	▲	●	●					●
	DNMG150604-STM	12.7	6.35	5.16	0.4					●	●	●	▲	▲	●	●					●
	DNMG150608-STM	12.7	6.35	5.16	0.8					●	●	●	▲	▲	●	●					●
	DNMG150612-STM	12.7	6.35	5.16	1.2					●	●	●	▲	▲	●	●					●

▲ Recommended Grade (Stock always available) ● Made to Order

Turning Blade - SNMG

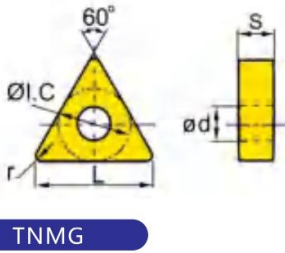


Material	Stable Cutting - ★				General Cutting - ☆					Unstable Cutting - ◆				
	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆	
Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆	
Stainless Steel	★	★	★	★								☆	☆	
Cast Iron	★	★	★	★									☆	☆
Nonferrous metals														
Abrasion resistant, Titanium alloy	★	★	★	★								☆	☆	

Inserts Shape	Type	Dimensions (mm)				Grade for Choice															
		Φ I.C	S	Φ d	R	1020	1120	1030	1130	715	725	705	715	725	715	725	503	513	402	405	
	SNMG090304-PMK	9.525	3.18	3.81	0.4					●	●	●	▲	▲	●	●					
	SNMG090308-PMK	9.525	3.18	3.81	0.8					●	●	●	▲	▲	●	●					
	SNMG120404-PMK	12.7	4.76	5.16	0.4					●	●	●	▲	▲	●	●					
	SNMG120408-PMK	15.875	4.76	5.16	0.8					●	●	●	▲	▲	●	●					
	SNMG120412-PMK	15.875	4.76	5.16	1.2					●	●	●	▲	▲	●	●					
	SNMG150612-PMK	19.05	6.35	6.35	1.2								▲	▲	●	●					
	SNMG190612-PMK	19.05	6.35	7.93	1.2								▲	▲	●	●					
SNMG190616-PMK	19.0	6.35	7.93	1.6								▲	▲	●	●						
	SNMG120404R/L-SS	12.7	4.76	5.16	0.4			●	●			▲	▲	▲	●	●					
	SNMG120408R/L-SS	12.7	4.76	5.16	0.8			●	●			▲	▲	▲	●	●					
	SNMG120412R/L-SS	12.7	4.76	5.16	1.2			●	●			▲	▲	▲	●	●					
	SNMG120404-MM	12.7	4.76	5.16	0.4	●	▲	●	▲			▲	▲	●	●	●					
	SNMG120408-MM	12.7	4.76	5.16	0.8	●	▲	●	▲			▲	▲	●	●	●					
	SNMG120412-MM	12.7	4.76	5.16	1.2	●	▲	●	▲			▲	▲	●	●	●					
	SNMG120404-TH	12.7	4.76	5.16	0.4					●	●	●	▲	▲	●	●					▲
	SNMG120408-TH	12.7	4.76	5.16	0.8					●	●	●	▲	▲	●	●					▲
	SNMG120412-TH	12.7	4.76	5.16	1.2					●	●	●	▲	▲	●	●					▲

▲ Recommended Grade (Stock always available) ● Made to Order

Turning Blade - TNMG

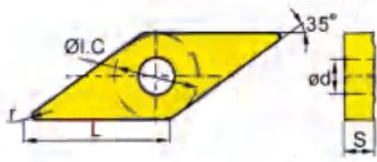


Material	Stable Cutting - ★				General Cutting - ☆					Unstable Cutting - ◆				
	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆	
Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆	
Stainless Steel	★	★	★	★								☆	☆	
Cast Iron	★	★	★	★									☆	☆
Nonferrous metals														
Abrasion resistant, Titanium alloy	★	★	★	★								☆	☆	

Inserts Shape	Type	Dimensions (mm)				Grade for Choice															
		Φ I.C	S	Φ d	R	1020	1120	1030	1130	715	725	705	715	725	715	725	503	513	402	405	
	TNMG160404-SPM	9.525	4.76	3.81	0.4					●	●	●	▲	▲	●	●					
	TNMG160408-SPM	9.525	4.76	3.81	0.8					●	●	●	▲	▲	●	●					
	TNMG160412-SPM	9.525	4.76	3.81	1.2					●	●	●	▲	▲	●	●					
	TNMG220404-SPM	12.7	4.76	5.16	0.4								▲	▲	●	●					
	TNMG220408-SPM	12.7	4.76	5.16	0.8								▲	▲	●	●					
	TNMG220412-SPM	12.7	4.76	5.16	1.2								▲	▲	●	●					
	TNMG160404-FM	9.525	4.76	3.81	0.4	●	▲	●	▲												
	TNMG160408-FM	9.525	4.76	3.81	0.8	●	▲	●	▲												
	TNMG160412-FM	9.525	4.76	3.81	1.2	●	▲	●	▲												
	TNMG160404R/L-SS	9.525	4.76	3.81	0.4			●	●			▲	▲	●	●	●					●
	TNMG160408R/L-SS	9.525	4.76	3.81	0.8			●	●			▲	▲	●	●	●					●
	TNMG160412R/L-SS	9.525	4.76	3.81	1.2			●	●			▲	▲	●	●	●					●
	TNMG160404-TH	9.525	4.76	3.81	0.4					●	●	●	▲	▲	●	●					▲
	TNMG160408-TH	9.525	4.76	3.81	0.8					●	●	●	▲	▲	●	●					▲
	TNMG160412-TH	9.525	4.76	3.81	1.2					●	●	●	▲	▲	●	●					▲
	TNMG220404-TH	12.7	4.76	5.16	0.4					●	●	●	▲	▲	●	●					▲
	TNMG220408-TH	12.7	4.76	5.16	0.8					●	●	●	▲	▲	●	●					▲
	TNMG220412-TH	12.7	4.76	5.16	1.2					●	●	●	▲	▲	●	●					▲

▲ Recommended Grade (Stock always available) ● Made to Order

Turning Blade - VNMG



VNMG

Stable Cutting - ★

General Cutting - ☆

Unstable Cutting - ◆

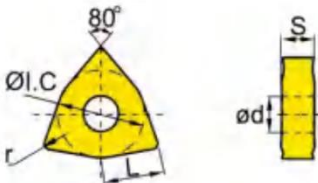
P
M
K
N
S

Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆		
Stainless Steel	★	★	★	★									☆	☆	
Cast Iron	★	★	★	★										☆	☆
Nonferrous metals															
Abrasion resistant, Titanium alloy	★	★	★	★									☆	☆	

Inserts Shape	Type	Dimensions (mm)				Grade for Choice															
		Φ I.C	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5	
	VNMG160404-STM	9.525	4.76	3.81	0.4					●	●	●	▲	▲	●	●					●
	VNMG160408-STM	9.525	4.76	3.81	0.8					●	●	●	▲	▲	●	●					●
	VNMG160412-STM	9.525	4.76	3.81	1.2					●	●	●	▲	▲	●	●					●

▲ Recommended Grade (Stock always available) ● Made to Order

Turning Blade - WNMG



WNMG

Stable Cutting - ★

General Cutting - ☆

Unstable Cutting - ◆

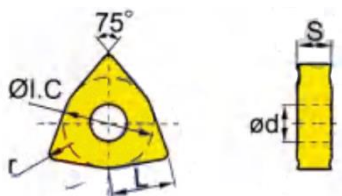
P
M
K
N
S

Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆		
Stainless Steel	★	★	★	★									☆	☆	
Cast Iron	★	★	★	★										☆	☆
Nonferrous metals															
Abrasion resistant, Titanium alloy	★	★	★	★									☆	☆	

Inserts Shape	Type	Dimensions (mm)				Grade for Choice															
		Φ I.C	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5	
	WNMG060408-SPM	9.525	4.76	3.81	0.8					●	●	●	▲	▲	●	●					●
	WNMG060412-SPM	9.525	4.76	3.81	1.2					●	●	●	▲	▲	●	●					●
	WNMG080404-SPM	12.7	4.76	5.16	0.4					●	●	●	▲	▲	●	●					●
	WNMG080408-SPM	12.7	4.76	5.16	0.8					●	●	●	▲	▲	●	●					●
	WNMG080412-SPM	12.7	4.76	5.16	1.2					●	●	●	▲	▲	●	●					●
	WNMG080404R/L-SS	12.7	4.76	5.16	0.4			●	●			▲	▲	●	●	●					●
	WNMG080408R/L-SS	12.7	4.76	5.16	0.8			●	●			▲	▲	●	●	●					●
	WNMG080412R/L-SS	12.7	4.76	5.16	1.2			●	●			▲	▲	●	●	●					●
	WNMG080404-FM	12.7	4.76	5.16	0.4	●	▲	●	▲												●
	WNMG080408-FM	12.7	4.76	5.16	0.8	●	▲	●	▲												●
	WNMG080412-FM	12.7	4.76	5.16	1.2	●	▲	●	▲												●
	WNMG080404-TH	12.7	4.76	5.16	0.4					●	●	●	▲	▲	●	●					▲
	WNMG080408-TH	12.7	4.76	5.16	0.8					●	●	●	▲	▲	●	●					▲
	WNMG080412-TH	12.7	4.76	5.16	1.2					●	●	●	▲	▲	●	●					▲

▲ Recommended Grade (Stock always available) ● Made to Order

Turning Blade - TNMX



TNMX

Stable Cutting - ★

General Cutting - ☆

Unstable Cutting - ◆

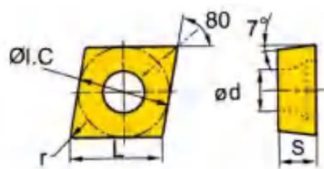
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Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆		
Stainless Steel	★	★	★	★									☆	☆	
Cast Iron	★	★	★	★										☆	☆
Nonferrous metals															
Abrasion resistant, Titanium alloy	★	★	★	★									☆	☆	

Inserts Shape	Type	Dimensions (mm)				Grade for Choice															
		Φ I.C	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5	
	TNMX1106-2	15.875	4.76	6.35	1.6					●	▲	●	▲	●	●					●	
	TNMX1509-2	22.225	9.52	7.94	1.6					●	▲	●	▲	●	●					●	
	TNMX1812-2	31.75	12.05	7.94	1.6					●	▲	●	▲	●	●					●	

▲ Recommended Grade (Stock always available) ● Made to Order

Turning Blade - CCMT



CCMT

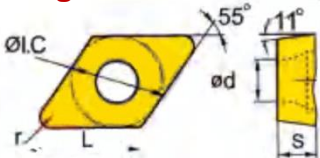
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	Stable Cutting - ★				General Cutting - ☆				Unstable Cutting - ◆						
Steel	★	★	★	★	★	★	☆	☆	☆	☆	◆	◆	◆	◆	
Stainless Steel	★	★	★	★									☆	☆	
Cast Iron	★	★	★	★										☆	☆
Nonferrous metals															
Abrasion resistant, Titanium alloy	★	★	★	★									☆	☆	

Inserts Shape	Type	Dimensions (mm)				Grade for Choice																
		Φ I.C	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5		
	CCMT060204-SPM	6.35	2.38	2.8	0.4			●	●	●	●	●	▲	▲	●							●
	CCMT060208-SPM	6.35	2.38	2.8	0.8			●	●	●	●	●	▲	▲	●							●
	CCMT09T304-SPM	9.525	3.97	4.4	0.4			●	●	●	●	●	▲	▲	●							●
	CCMT09T308-SPM	9.525	3.97	4.4	0.8			●	●	●	●	●	▲	▲	●							●
	CCMT120404-SPM	12.7	4.76	5.56	0.4			●	●	●	●	●	▲	▲	●							●
	CCMT120408-SPM	12.7	4.76	5.56	0.8			●	●	●	●	●	▲	▲	●							●
	CCMT060204-SHQ	6.35	2.38	2.8	0.4			●	●	●	●	●	▲	▲	●							●
	CCMT060208-SHQ	6.35	2.38	2.8	0.8			●	●	●	●	●	▲	▲	●							●
	CCMT09T304-SHQ	9.525	3.97	4.4	0.4			●	●	●	●	●	▲	▲	●							●
	CCMT09T308-SHQ	9.525	3.97	4.4	0.8			●	●	●	●	●	▲	▲	●							●
	CCMT120404-SHQ	12.7	4.76	5.56	0.4			●	●	●	●	●	▲	▲	●							●
	CCMT120408-SHQ	12.7	4.76	5.56	0.8			●	●	●	●	●	▲	▲	●							●

▲ Recommended Grade (Stock always available) ● Made to Order

Turning Blade - DCMT



DCMT

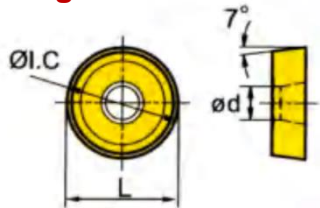
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	Stable Cutting - ★				General Cutting - ☆				Unstable Cutting - ◆						
Steel	★	★	★	★	★	★	☆	☆	☆	☆	◆	◆	◆	◆	
Stainless Steel	★	★	★	★									☆	☆	
Cast Iron	★	★	★	★										☆	☆
Nonferrous metals															
Abrasion resistant, Titanium alloy	★	★	★	★									☆	☆	

Inserts Shape	Type	Dimensions (mm)				Grade for Choice																
		Φ I.C	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5		
	DCMT070204-SHQ	6.35	2.38	2.8	0.4			●	●	●	●	●	▲	▲	●							●
	DCMT070208-SHQ	6.35	2.38	2.8	0.8			●	●	●	●	●	▲	▲	●							●
	DCMT11T304-SHQ	9.525	3.97	4.4	0.4			●	●	●	●	●	▲	▲	●							●
	DCMT11T308-SHQ	9.525	3.97	4.4	0.8			●	●	●	●	●	▲	▲	●							●
	DCMT11T312-SHQ	9.525	3.97	4.4	1.2			●	●	●	●	●	▲	▲	●							●

▲ Recommended Grade (Stock always available) ● Made to Order

Turning Blade - RCMX



RCMX

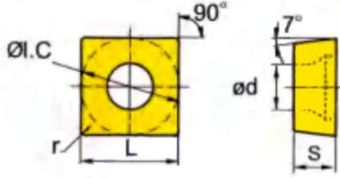
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	Stable Cutting - ★				General Cutting - ☆				Unstable Cutting - ◆						
Steel	★	★	★	★	★	★	☆	☆	☆	☆	◆	◆	◆	◆	
Stainless Steel	★	★	★	★									☆	☆	
Cast Iron	★	★	★	★										☆	☆
Nonferrous metals															
Abrasion resistant, Titanium alloy	★	★	★	★									☆	☆	

Inserts Shape	Type	Dimensions (mm)				Grade for Choice																
		Φ I.C	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5		
	RCMX1003MO	10	3.18	3.6	10			●	●	●	●	●	▲	▲	●							●
	RCMX1204MO	12	4.76	4.4	12			●	●	●	●	●	▲	▲	●							●
	RCMX1606MO	16	6.35	5.5	16			●	●	●	●	●	▲	▲	●							●
	RCMX2006MO	20	6.35	6.5	20			●	●	●	●	●	▲	▲	●							●
	RCMX3206MO	32	9.52	9.5	32			●	●	●	●	●	▲	▲	●							●

▲ Recommended Grade (Stock always available) ● Made to Order

Turning Blade – SCMT



SCMT

P
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Stable Cutting - ★

General Cutting - ☆

Unstable Cutting - ◆

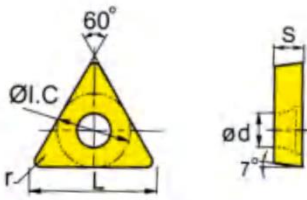
Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆		
Stainless Steel	★	★	★	★									☆	☆	
Cast Iron	★	★	★	★										☆	☆
Nonferrous metals															
Abrasion resistant, Titanium alloy	★	★	★	★									☆	☆	

Inserts Shape	Type	Dimensions (mm)				Grade for Choice															
		Φ I.C	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5	
	SCMT09T304-SPM	10	3.18	3.6	10			●	●	●	●	●	▲	▲	●						●
	SCMT09T308-SPM	12	4.76	4.4	12			●	●	●	●	●	▲	▲	●						●
	SCMT120404-SPM	16	6.35	5.5	16			●	●	●	●	●	▲	▲	●						●
	SCMT120408-SPM	20	6.35	6.5	20			●	●	●	●	●	▲	▲	●						●
	SCMT120412-SPM	32	9.52	9.5	32			●	●	●	●	●	▲	▲	●						●

▲ Recommended Grade (Stock always available)

● Made to Order

Turning Blade – TCMT



TCMT

P
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Stable Cutting - ★

General Cutting - ☆

Unstable Cutting - ◆

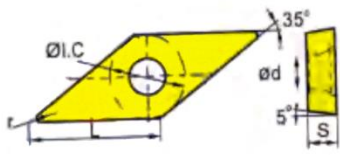
Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆			
Stainless Steel	★	★	★	★										☆	☆	
Cast Iron	★	★	★	★											☆	☆
Nonferrous metals																
Abrasion resistant, Titanium alloy	★	★	★	★										☆	☆	

Inserts Shape	Type	Dimensions (mm)				Grade for Choice															
		Φ I.C	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5	
	TCMT090204-SM	5.56	2.38	2.5	0.4			●	●	●	●	●	▲	▲	●						●
	TCMT090208-SM	5.56	2.38	2.5	0.8			●	●	●	●	●	▲	▲	●						●
	TCMT110204-SM	6.35	2.38	2.8	0.4			●	●	●	●	●	▲	▲	●						●
	TCMT110208-SM	6.35	2.38	2.8	0.8			●	●	●	●	●	▲	▲	●						●
	TCMT16T304-SM	9.525	3.97	4.4	0.4			●	●	●	●	●	▲	▲	●						●
	TCMT16T308-SM	9.525	3.97	4.4	0.8			●	●	●	●	●	▲	▲	●						●
	TCMT090204-HQ	5.56	2.38	2.5	0.4			●	●	●	●	●	▲	▲	●						●
	TCMT090208-HQ	5.56	2.38	2.5	0.8			●	●	●	●	●	▲	▲	●						●
	TCMT110204-HQ	6.35	2.38	2.8	0.4			●	●	●	●	●	▲	▲	●						●
	TCMT110208-HQ	6.35	2.38	2.8	0.8			●	●	●	●	●	▲	▲	●						●
	TCMT16T304-HQ	9.525	3.97	4.4	0.4			●	●	●	●	●	▲	▲	●						●
	TCMT16T308-HQ	9.525	3.97	4.4	0.8			●	●	●	●	●	▲	▲	●						●

▲ Recommended Grade (Stock always available)

● Made to Order

Turning Blade – VBMT



VBMT

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Stable Cutting - ★

General Cutting - ☆

Unstable Cutting - ◆

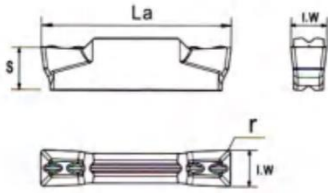
Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆			
Stainless Steel	★	★	★	★										☆	☆	
Cast Iron	★	★	★	★											☆	☆
Nonferrous metals																
Abrasion resistant, Titanium alloy	★	★	★	★										☆	☆	

Inserts Shape	Type	Dimensions (mm)				Grade for Choice															
		Φ I.C	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5	
	VBMT160404-HQ	9.525	4.76	4.4	0.4			●	●	●	●	●	▲	▲	●						●
	VBMT160408-HQ	9.525	4.76	4.4	0.8			●	●	●	●	●	▲	▲	●						●
	VBMT160412-HQ	9.525	4.76	4.4	1.2			●	●	●	●	●	▲	▲	●						●

▲ Recommended Grade (Stock always available)

● Made to Order

Grooving Cutting Blade – MGMN



MGMN

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Stable Cutting - ★

General Cutting - ☆

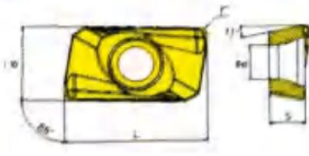
Unstable Cutting - ◆

Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆								
Stainless Steel	★	★	★	★														☆	☆		
Cast Iron	★	★	★	★																☆	☆
Nonferrous metals																					
Abrasion resistant, Titanium alloy	★	★	★	★														☆	☆		

Inserts Shape	Type	Dimensions (mm)					Grade for Choice																
		L	W	S	Φ d	R	1020	1120	1030	1130	715	7215	7025	7125	7225	7135	7235	5035	5135	4020	4025		
	MGMN200-M	16.0	2.00	3.98		0.2	●	▲	▲	●				▲	▲					●	●		●
	MGMN300-M	21.0	3.00	5.63		0.4	●	▲	▲	●				▲	▲					●	●		●
	MGMN400-M	21.0	4.00	5.88		0.4	●	▲	▲	●				▲	▲					●	●		●
	MGMN500-M	26.05	5.00	7.05		0.8	●	▲	▲	●				▲	▲					●	●		●
	MGMN200-G	16.0	2.00	3.98		0.2	●	▲	▲	●				▲	▲					●	●		●
	MGMN300-G	21.0	3.00	5.63		0.4	●	▲	▲	●				▲	▲					●	●		●
	MGMN400-G	21.0	4.00	5.88		0.4	●	▲	▲	●				▲	▲					●	●		●
	MGMN500-G	26.05	5.00	7.05		0.8	●	▲	▲	●				▲	▲					●	●		●
	MGMN200-MG	16.0	2.00	3.98		0.2	●	▲	▲	●				▲	▲					●	●		●
	MGMN300-MG	21.0	3.00	5.63		0.4	●	▲	▲	●				▲	▲					●	●		●
	MGMN400-MG	21.0	4.00	5.88		0.4	●	▲	▲	●				▲	▲					●	●		●
	MGMN500-MG	26.05	5.00	7.05		0.8	●	▲	▲	●				▲	▲					●	●		●

▲ Recommended Grade (Stock always available) ● Made to Order

Milling Blade – APMT



APMT

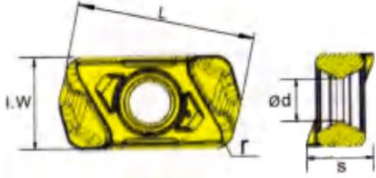
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	Stable Cutting - ★				General Cutting - ☆					Unstable Cutting - ◆					
	Steel	Stainless Steel	Cast Iron	Nonferrous metals	Abrasion resistant, Titanium alloy										
Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆		
Stainless Steel	★	★	★	★								☆	☆		
Cast Iron	★	★	★	★										☆	☆
Nonferrous metals															
Abrasion resistant, Titanium alloy	★	★	★	★								☆	☆		

Inserts Shape	Type	Dimensions (mm)					Grade for Choice															
		L	W	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5	
	APMT1135PDR	11.35	6.2	3.5		0.8	●	●	▲	●									●	●	●	
	APMT1604PDER	17.35	9.3	5.35		0.8	●	●	▲	●									●	●	●	
	APMT1135PDR-M2	11.35	6.2	3.5		0.8	●	●	▲	●									●	●	●	
	APMT1604PDER-M2	17.25	9.25	4.76		0.8	●	●	▲	●									●	●	●	
	APMT1135PDR-H2	11.35	6.2	3.5		0.8	●	●	▲	●									●	●	●	
	APMT1604PDER-H2	17.25	9.25	4.76		0.8	●	●	▲	●									●	●	●	

▲ Recommended Grade (Stock always available) ● Made to Order

Milling Blade – LNMU



LNMU

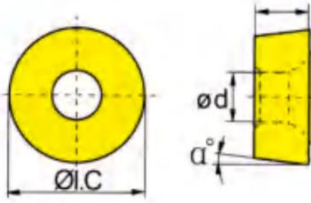
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	Stable Cutting - ★				General Cutting - ☆					Unstable Cutting - ◆					
	Steel	Stainless Steel	Cast Iron	Nonferrous metals	Abrasion resistant, Titanium alloy										
Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆		
Stainless Steel	★	★	★	★									☆	☆	
Cast Iron	★	★	★	★										☆	☆
Nonferrous metals															
Abrasion resistant, Titanium alloy	★	★	★	★									☆	☆	

Inserts Shape	Type	Dimensions (mm)					Grade for Choice															
		L	W	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5	
	LNMU0303-TH	11.60	6.00	4.4	2.8	1.2	●	●	▲	●									●	●	●	
	BLMP0603R-M	6.39	9.39	3.73			●	●	▲	●									●	●	●	
	BLMP0904R-M						●	●	▲	●									●	●	●	

▲ Recommended Grade (Stock always available) ● Made to Order

Milling Blade – RPMT



RPMT

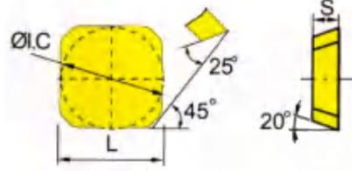
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	Stable Cutting - ★				General Cutting - ☆					Unstable Cutting - ◆					
	Steel	Stainless Steel	Cast Iron	Nonferrous metals	Abrasion resistant, Titanium alloy										
Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆		
Stainless Steel	★	★	★	★									☆	☆	
Cast Iron	★	★	★	★										☆	☆
Nonferrous metals															
Abrasion resistant, Titanium alloy	★	★	★	★									☆	☆	

Inserts Shape	Type	Dimensions (mm)				Grade for Choice																
		Φ I.C.	S	Φ d	α'	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5		
	RPMT0803MO-SL	8.0	3.18		11'	●	●	▲	●										●	●		
	RPMT10T3MO-SL	10.0	3.97		11'	●	●	▲	●										●	●		
	RPMT1204MO-SL	12.0	4.76		11'	●	●	▲	●										●	●		
	RPMW1003MO	10.0	3.18		11'	●	●	▲	●										●	●		
	RDMW1204MO	12.0	4.76		15'	●	●	▲	●										●	●		
	RDMW1605MO	16.0	5.56		15'	●	●	▲	●										●	●		
	RDMT10T3MO-RL	10.0	3.97		15'	●	●	▲	●										●	●		
	RDMT1204MO-RL	12.0	4.76		15'	●	●	▲	●										●	●		
	RDMT1604MO-RL	16.0	4.76		15'	●	●	▲	●										●	●		

▲ Recommended Grade (Stock always available) ● Made to Order

Milling Blade – SEKR



SEKR

Stable Cutting - ★

General Cutting - ☆

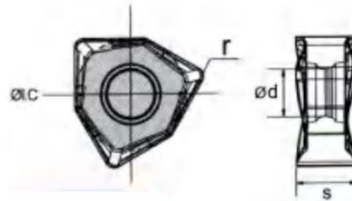
Unstable Cutting - ◆

P M K N S	Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆		
	Stainless Steel	★	★	★	★									☆	☆	
	Cast Iron	★	★	★	★										☆	☆
	Nonferrous metals															
	Abrasion resistant, Titanium alloy	★	★	★	★									☆	☆	

Inserts Shape	Type	Dimensions (mm)					Grade for Choice																
		L	W	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 3 3 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5	
	SEKR1203AFTN	12.7	12.7	3.18			●	●	▲	●										●	●	●	
	SEKR1504AFTN	15.8 75	15.8 75	4.76			●	●	▲	●										●	●	●	

▲ Recommended Grade (Stock always available) ● Made to Order

Milling Blade – WMNU



WMNU

Stable Cutting - ★

General Cutting - ☆

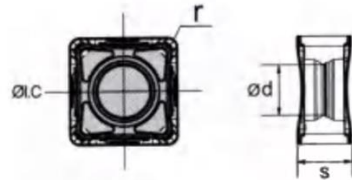
Unstable Cutting - ◆

P M K N S	Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆			
	Stainless Steel	★	★	★	★										☆	☆	
	Cast Iron	★	★	★	★											☆	☆
	Nonferrous metals																
	Abrasion resistant, Titanium alloy	★	★	★	★										☆	☆	

Inserts Shape	Type	Dimensions (mm)					Grade for Choice															
		L	W	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 3 3 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5
	WMNU060408-PMK	12.7	12.7	7.0	5.5	1.2	●	●	▲	●									●	●	●	
	WMNU080608-PMK	12.7	12.7	7.0	5.5		●	●	▲	●										●	●	●

▲ Recommended Grade (Stock always available) ● Made to Order

Milling Blade – SNMX



SNMX

Stable Cutting - ★

General Cutting - ☆

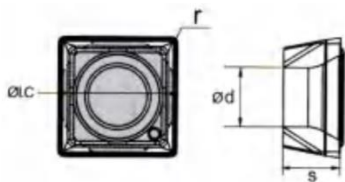
Unstable Cutting - ◆

P M K N S	Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆			
	Stainless Steel	★	★	★	★										☆	☆	
	Cast Iron	★	★	★	★											☆	☆
	Nonferrous metals																
	Abrasion resistant, Titanium alloy	★	★	★	★										☆	☆	

Inserts Shape	Type	Dimensions (mm)					Grade for Choice															
		L	W	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 3 3 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5
	SNMX060408-PMK	12.7	12.7	7.0	5.5	1.2	●	●	▲	●									●	●	●	
	SNMX080608-PMK	12.7	12.7	7.0	5.5		●	●	▲	●										●	●	●

▲ Recommended Grade (Stock always available) ● Made to Order

Standard Orifice Processing Blade – SPMG



SPMG

P
M
K
N
S

Stable Cutting - ★

General Cutting - ☆

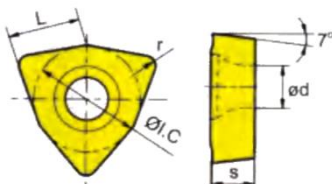
Unstable Cutting - ◆

Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆						
Stainless Steel	★	★	★	★													☆	☆	
Cast Iron	★	★	★	★														☆	☆
Nonferrous metals																			
Abrasion resistant, Titanium alloy	★	★	★	★													☆	☆	

Inserts Shape	Type	Dimensions (mm)					Grade for Choice															
		L	W	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5	
	SPMG060204-DG	6.00	6.00	2.38	2.61	0.4	●	●	▲	●									●	●	●	
	SPMG07T308-DG	7.94	7.94	3.97	2.85	0.8	●	●	▲	●									●	●	●	
	SPMG090408-DG	9.80	9.80	4.30	4.05	0.8	●	●	▲	●									●	●	●	
	SPMG110408-DG	11.5	11.5	4.80	4.45	0.8	●	●	▲	●									●	●	●	
	SPMG140512-DG	14.3	14.3	5.20	5.75	1.2	●	●	▲	●									●	●	●	
	SOMT050204-DP	4.90	4.90	2.38	2.25	0.4	●	●	▲	●									●	●	●	
	SOMT060204-DP	5.70	5.70	2.38	2.60	0.4	●	●	▲	●									●	●	●	
	SOMT070306-DP	6.80	6.80	2.80	2.60	0.6	●	●	▲	●									●	●	●	
	SOMT08T306-DP	7.90	7.90	3.97	2.85	0.6	●	●	▲	●									●	●	●	

▲ Recommended Grade (Stock always available) ● Made to Order

Standard Orifice Processing Blade – WCMX



WCMX

P
M
K
N
S

Stable Cutting - ★

General Cutting - ☆

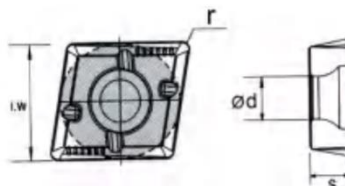
Unstable Cutting - ◆

Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆							
Stainless Steel	★	★	★	★														☆	☆	
Cast Iron	★	★	★	★															☆	☆
Nonferrous metals																				
Abrasion resistant, Titanium alloy	★	★	★	★														☆	☆	

Inserts Shape	Type	Dimensions (mm)					Grade for Choice															
		L	W	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5	
	WCMX050308-TT	5.40	7.94	3.18	3.20	0.8	●	●	▲	●									●	●	●	
	WCMX06T308-TT	6.50	9.52	3.97	3.70	0.8	●	●	▲	●									●	●	●	
	WCMX080412-TT	8.70	12.7	4.76	4.30	1.2	●	●	▲	●									●	●	●	

▲ Recommended Grade (Stock always available) ● Made to Order

Standard Orifice Processing Blade – WDXT



WDXT

P
M
K
N
S

Stable Cutting - ★

General Cutting - ☆

Unstable Cutting - ◆

Steel	★	★	★	★	★	★	☆	☆	☆	◆	◆	◆	◆							
Stainless Steel	★	★	★	★														☆	☆	
Cast Iron	★	★	★	★															☆	☆
Nonferrous metals																				
Abrasion resistant, Titanium alloy	★	★	★	★														☆	☆	

Inserts Shape	Type	Dimensions (mm)					Grade for Choice															
		L	W	S	Φ d	R	1 0 2 0	1 1 2 0	1 0 3 0	1 1 3 0	7 1 1 5	7 2 1 5	7 0 2 5	7 1 2 5	7 2 2 5	7 1 3 5	7 2 3 5	5 0 3 5	5 1 3 5	4 0 2 0	4 0 2 5	
	WDXT094008-G		9.6	4.0		0.8	●	●	▲	●									●	●	●	
	WDXT125012-G		12.4	5.0		1.2	●	●	▲	●									●	●	●	
	WDXT156012-G		15.4	6.0		1.2	●	●	▲	●									●	●	●	
	WDXT186012-G		18.0	6.0		1.2	●	●	▲	●									●	●	●	

▲ Recommended Grade (Stock always available) ● Made to Order



Black Diamond Drilling Tools USA Inc.

BD Drill Add: 131 Daniel Webster Hwy, #426 Nashua, NH 03060 Tel: 1 978-319-8000 www.bddrill.us