

Brief introduction

Zhuzhou Cemented Carbide Cutting Tools Co.,Ltd. (**ZCC·CT**) is a subsidiary company of the China Tungsten High-tech Materials, located in Hunan province, China.

With 60 years experience in the manufacture of cemented carbide products, a team of enthusiastic design engineers, and the world's most advanced technology and equipment, **ZCC·CT** has created the perfect combination required to lead China in the production and distribution of highly productive, superior quality carbide cutting tools long into the future.

History of **ZCC·CT**

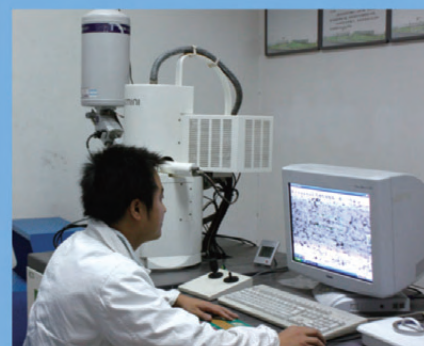
- 1954 - Zhuzhou Cemented Carbide Works founded cemented carbide production in China.
- 1988 - Introduced advanced technology and equipment to produce high precision indexable cemented carbide inserts for metal cutting.
- 1992 - Solid carbide cutting tools and end mill production line were started with the introduction of international technology and equipment.
- 2002 - Zhuzhou Cemented Carbide Cutting Tools Co Ltd.was founded. Cemented carbide indexable insert production line, and solid carbide cutting tool production line were transformed by the introduction of advanced technology and processing equipment sourced from respected international suppliers. The research and development section was enhanced through the introduction of an ever-growing team of highly skilled engineers working full time to improve and expand the range of solid carbide cutting tools, indexable inserts, and toolholding systems.
- 2006 - Established wholly-owned subsidiaries in Europe and the United States to expand overseas markets.
- 2011 - Becoming a member of the China Minmetals Group; The foundation of industrial park of Zhuzhou cemented precision tools.
- 2015 - China cemented carbide laboratory passed acceptance.
- 2018 - Acquisition of German HPtec company.

Research and Development

A highly trained R & D staff work hard continuously in the field of cutting tool substrate material development, coating material technology, and insert chipbreaker design.

They also conduct testing and evaluations of newly designed tools prior to market introduction.

ZCC·CT's research & development center is the most advanced and modern scientific research base in China for promoting the development of cemented carbide cutting tools.

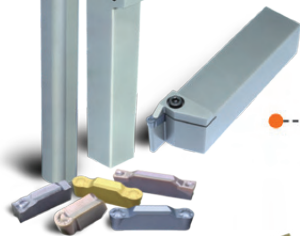


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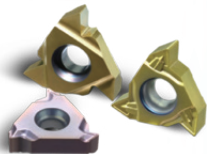
GENERAL TURNING TOOLS

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PARTING, GROOVING TOOLS

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THREADING TOOLS

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MILLING TOOLS

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SOLID CARBIDE CUTTING TOOLS

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BORING TOOLS

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A

B

C

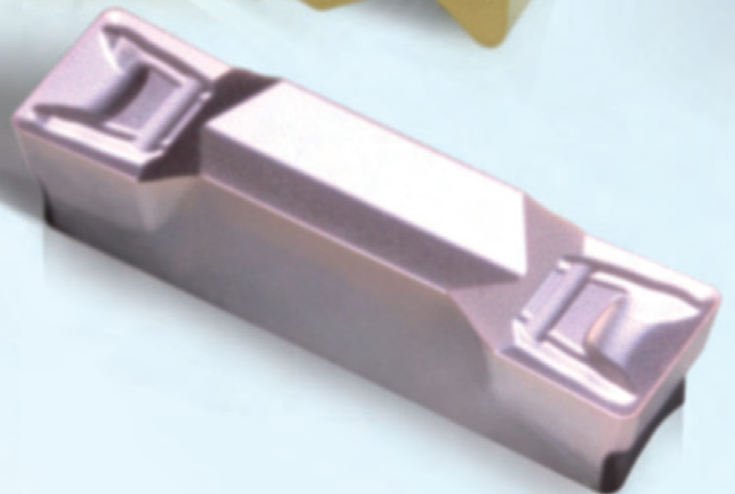
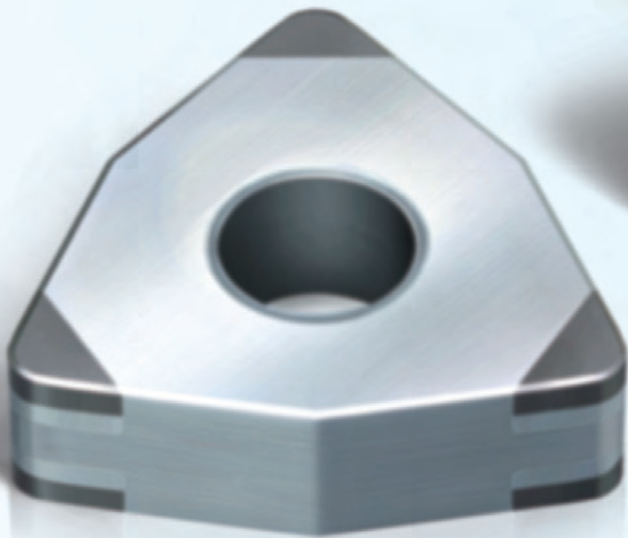
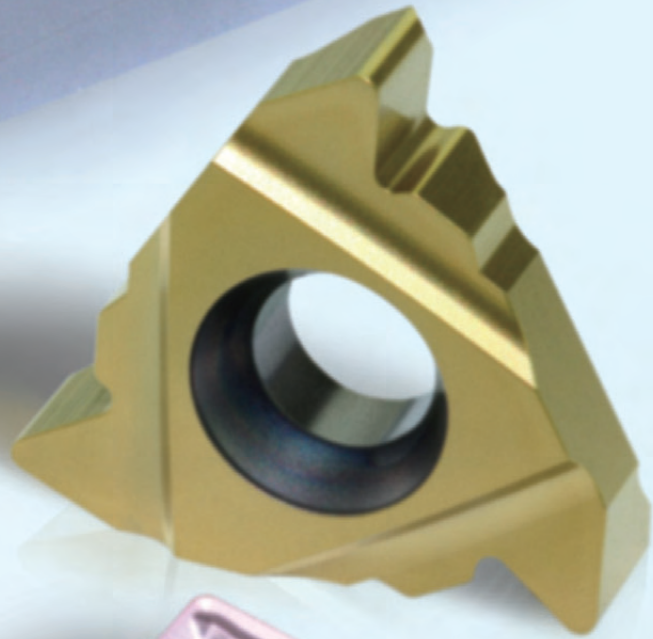
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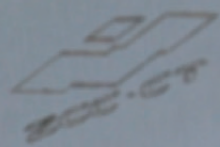
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- This catalog shows basic types of standard series inserts and cutting tools. If you have any questions or feedback, please feel free to contact our Sales Department. We will try our best to satisfy you.
- All information in this catalog relates to current products. We will improve our products as our technology develops.
- All technical data in this catalog is prescribed for given working conditions. Please use it as a reference for your own working conditions.

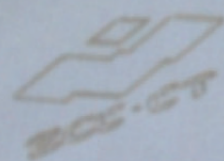
Turning Tools





DV JNR2525M16
40529344

V16BM CND#22C SMS#8.65XA1 SPR6 CSRA



DC
40





GENERAL TURNING TOOLS

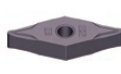
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Turning

Product overview

Turning inserts

For finishing



DNEG-NGF

VNEG-NGF

CNMG-DF

CNMG-SF

CNMG-EF

CNEG-NF

DNMG-DF

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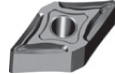
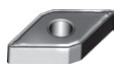
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DNMG-SF

DNMG-EF

DNEG-NF

SNMG-DF

SNMG-EF

SNMG-SF

TNMG-DF

TNMG-SF

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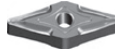
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TNMG-EF

VNMG-DF

VNMG-EF

VNEG-NF

VNMG-SF

WNMG-DF

WNMG-SF

WNMG-EF

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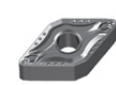
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WNEG-NF

CNMG-WGF

DNMX-WGF

TNMX-WGF

WNMG-WGF

CNMG-WGM

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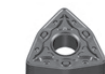
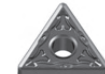
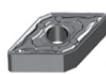
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DNMX-WGM

TNMX-WGM

WNMG-WGM

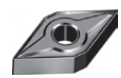
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For semi-finishing



CNMG-PM

CNMG-DM

CNMG-EM

CNMG-NM

DNMG-PM

DNMG-DM

DNMG-EM

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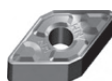
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DNMG-NM

SNMG-PM

SNMG-DM

SNMG-EM

SNMG-NM

TNMG-PM

TNMG-DM

TNMG-EM

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VNMG-PM

VNMG-DM

VNMG-EM

VNMG-NM

WNMG-PM

WNMG-DM

WNMG-EM

WNMG-NM

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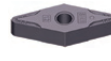
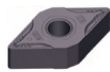
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Negative inserts



Negative inserts

For roughing



CNMG-SNR

DNMG-SNR

SNMG-SNR

TNMG-SNR

VNMG-SNR

WNMG-SNR

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CNMG-DR

CNMM-DR

CNMG-ER

CNMM-ER

DNMG-DR

DNMM-DR

DNMG-ER

DNMM-ER

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SNMG-DR

SNMM-DR

SNMG-ER

SNMM-ER

TNMG-DR

TNMM-DR

TNMG-ER

WNMG-DR

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Conventional chipbreaker



CNMG

DNMG

SNMG

SNMM

TNMG

TNMM

VNMG

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Without chipbreaker (flat top)



CNMA

DNMA

SNMA

SNGN/SNUN

TNMA

WNMA

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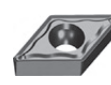
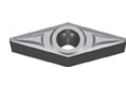
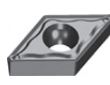
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Positive inserts

For fine finishing



CCGT-SF

DCGT-SF

VCGT-SF

CPGT-SF

DPGT-SF

TPGT-SF

TPGH-L

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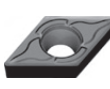
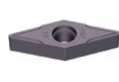
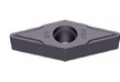
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For finishing



VCGT-NGF

VBET-NGF

CCMT-HF

CCMT-EF

DCMT-HF

DCMT-EF

SCMT-HF

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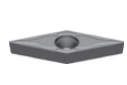
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SCMT-EF

TCMT-HF

TCMT-EF

VCGT-HF

VBMT-HF

VBMT-EF

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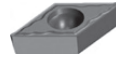
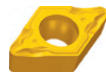
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A

Positive inserts

For semi-finishing



CCMT-HM

CCMT-EM

DCMT-HM

DCMT-EM

SCMT-HM

SCMT-EM

TCMT-HM

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TCMT-EM

VBMT-HM

VBMT-EM

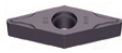
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For roughing



VBMT-SNR

CCMT-HR

DCMT-HR

SCMT-HR

TCMT-HR

VBMT-HR

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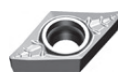
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For AI machining



CCGX-LC

CCGX-LH

DCGX-LC

DCGX-LH

SCGX-LC

SCGX-LH

TCGX-LC

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TCGX-LH

VCGX-LC

VCGX-LH

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Conventional chipbreaker



SCMT

TCMT






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PCBN&PCD inserts









Negative inserts

				
CNGA	DNGA	TNGA	VNGA	WNGA
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PCBN inserts turning case

			
CNGN	DNGN	SNGN	RNGN
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Positive inserts

							
CCGW	CCMX	DCGW	DCMX	TCGW	TCMX	VBGW	VBMX
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VCGW	VCMX
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Parting and grooving inserts

Little squirrel series

					
ZP□D-MG	ZP□S-MG	ZT□D-MG	ZT□S-MG	ZT□D-MM	ZT□D-EG
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ZT□D-EG	ZIMF-SM	ZR□D-MG	ZR□D-NM	ZR□D-EG	ZIGQ-NM	ZIGQ-NF
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Threading inserts

Right hand type

ISO metric thread



External thread

Internal thread

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General pitch thread



External thread

Internal thread

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Whitworth thread



External thread

Internal thread

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Right hand type

Unified thread



External thread

Internal thread

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British standard taper pipe threads



External thread

Internal thread

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NPT American standard taper pipe threads



External thread

Internal thread

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Right hand type

American standard aerospace and aviation threads



External thread

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American ACME



External thread

Internal thread

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American STUB-ACME (Short tooth threads)



External thread

Internal thread

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Right hand type

API 60°



External thread

Internal thread

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API Round



External thread

Internal thread

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API Buttress Casing



External thread

Internal thread

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Right hand type

ISO metric thread Full Form(Thin type)



External thread

Internal thread

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General pitch thread Without end(Thin type)



External thread

Internal thread

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Whitworth thread(Thin type)



External thread

Internal thread

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Right hand type

Unified thread(Thin type)



External thread

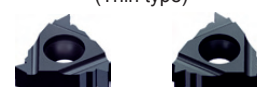
Internal thread

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British standard taper pipe threads (Thin type)



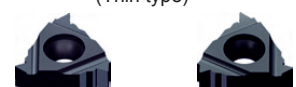
External thread

Internal thread

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American standard taper pipe threads (Thin type)



External thread

Internal thread

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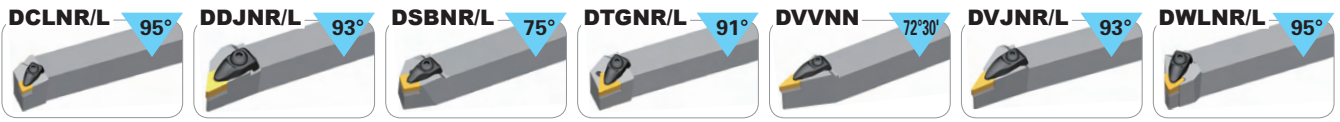
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A

Turning toolholders

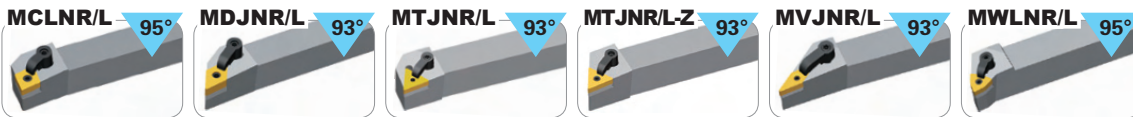
External turning toolholders

D-Multi clamp



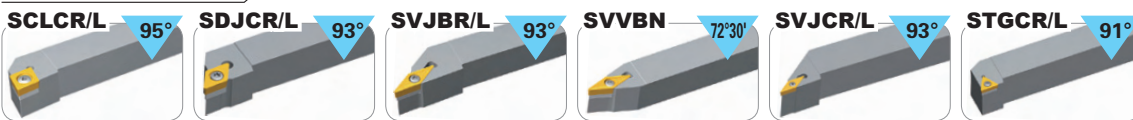
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M-Multi clamp



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S-Screw clamp



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Boring Bars

P-Lever clamp



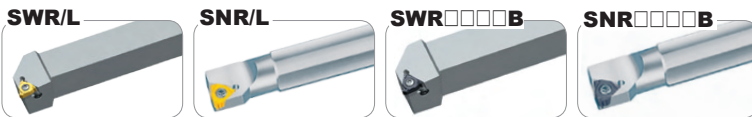
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S-Screw clamp



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Threading tools

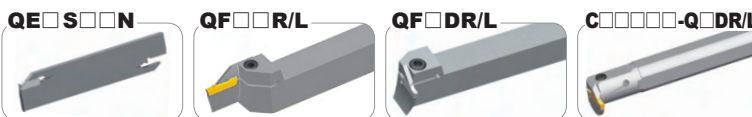


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Parting and grooving tools



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Table of recommended grades for turning inserts

ISO	General turning							Threading	Parting and grooving			
	Code	Coated grade		Cermet	Coated cermet	Cemented carbide	PCBN	PCD	Coating	Coating		Cemented carbide
		CVD	PVD						PVD	CVD	PVD	
P Steel	01											
	10	YBC151										
	20	YBC251	YBC152									
	30		YBC252									
	40		YBC351	YBC352								
M Stainless steel	01											
	10	YBM151										
	20	YBM251										
	30		YBM253									
	40											
K Cast iron	01											
	10	YBD052	YBD102	YBD152								
	20			YBD252								
	30											
	40											
N non-ferrite materials	01											
	10											
	20											
	30											
	40											
S Heat-resistant steel	01											
	10		YBS103	YBG102	YBG105							
	20											
	30											
	40											
H Hardened material	01											
	10											
	20											
	30											
	40											

Introduction of chip-breakers

Negative inserts with a hole

Application	Chipbreaker	Precision	Recommended cutting parameters	Chipbreaker profile	Feature/Shape of insert
For finishing	SF	M			Recommended chipbreaker for fine-finishing P-kind soft steel Double-side chipbreaker with M-class tolerance has outstanding performance on machining P kind soft steel and medium-carbon steel to ensure high surface quality.
	DF	M			Recommended chipbreaker for finishing P-kind materials Double-side chipbreaker with M-class tolerance for finish machining carbon and alloy steels.
	EF	M			Recommended chipbreaker for finishing M-kind materials Double-side chipbreaker with M-class tolerance with sharp edge for machining stainless steel to reduce built-up edge and work-hardening, while improving surface finish.
	NF	E			Recommended chipbreaker for finishing S-kind materials Double-side chipbreaker with E-class precision, for holding close tolerance when indexing. Wear resistance and work hardening resistance combine to achieve high machining precision.
	NGF	E			Recommended chipbreaker for general finishing of S- materials E-class double side chip breaker with excellent sharp edge. High positioning accuracy, light cutting force. -NGF is recommended chip breaker for S series material general finishing.
Wiper	WGF	M			Wiper chipbreaker for finishing Double-sided chipbreaker with M-level tolerance, finishing chipbreaker with wiper designed can achieve high surface quality. With excellent chip breaking ability, It is suitable for machining at high feed and small depth of cut.
For semi-finishing	DM	M			Recommended chipbreaker for semi-finishing P-kind materials Double-side chipbreaker with M-class tolerance reduces cutting force and workpiece adhesion, with a broad chipbreaking range for machining alloy steel.
	PM	M			Recommended chipbreaker for semi-finishing P-kind materials Double-side chipbreaker with M-class tolerance has higher toughness on cutting edge than DM chipbreaker. It's suitable for semi-finishing under unfavorable conditions. Also good for machining cast iron with low cutting force.



Negative inserts with a hole

Introduction of chip-breakers

Application	Chipbreaker	Precision	Recommended cutting parameters	Chipbreaker profile	Feature/Shape of insert
For semi-finishing	NM	M			<p>Recommended chipbreaker for semi-finishing S-kind materials Double-side chipbreaker with M-class tolerance with good capability to prevent wear and work-hardening when machining low-machinability rated metals. Possesses higher feed and depth of cut capability than NF chipbreaker.</p>
	WGM	M			<p>Wiper chipbreaker for semi-finishing Double-sided chipbreaker with M-level tolerance, semi-finishing chipbreaker with wiper designed, perfect combination of good wiper result and sturdy cutting edge structure, which perfectly meet the requirement of high efficiency and good surface quality.</p>
	EM	M			<p>Recommended chipbreaker for semi-finishing M-kind materials Double-side chipbreaker with M-class tolerance serves to reduce cutting force and workpiece adhesion when machining stainless steel. Possesses higher feed and depth of cut capability than EF chipbreaker.</p>
	Conventional Chipbreaker	M			<p>For machining P-kind, M-kind, K-kind materials from semifinishing to roughing Double-side chipbreaker with M-class tolerance has good cutting edge toughness with wide application area. Unfavorable chip control compared to dedicated chipbreakers.</p>
Light-load roughing	DR Double-side	M			<p>Recommended chipbreaker for light-load roughing of P-kind and K-kind materials Double-side chipbreaker with M-class tolerance for light roughing, higher metal removal rate, and greater cutting edge security.</p>
For roughing	ER Single/Double side	M	 		<p>Recommended chipbreaker for roughing M-kind materials Single/Double side chipbreaker with M-class tolerance has good impact-resistance. The chipbreaker's cutting edge is designed to balance security and sharpness. High performance is achieved by reducing edge build-up and reducing heat when roughing stainless steel.</p>

Introduction of chip-breakers


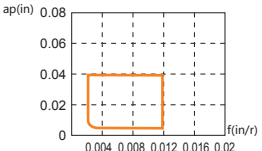
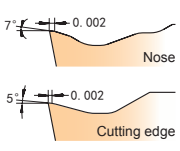


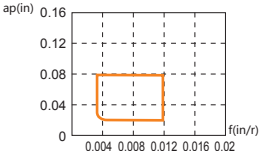
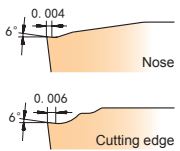


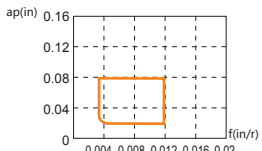
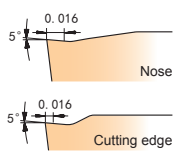


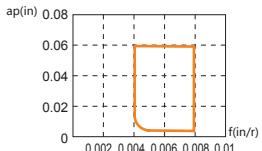
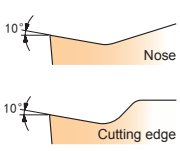


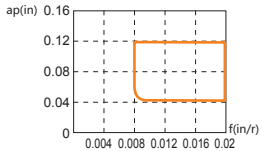
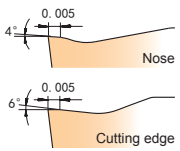


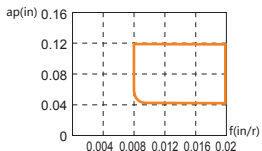
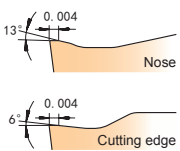

Negative inserts with a hole

Application	Chipbreaker	Precision	Recommended cutting parameters	Chipbreaker profile	Feature/Shape of insert
For roughing	DR Single-side	M			<p>Recommended chipbreaker for roughing P-kind materials Single-side chipbreaker with M-class tolerance has high security on cutting edge for higher removal rates and low cutting force at large cutting depth and high feed rates.</p>
	SNR	M			<p>Recommended chipbreaker for S-material high efficiency roughing M-level double-sided chipbreaker perfectly combines sharpness and strength of the cutting edge, with small cutting resistance and high edge strength can effectively reduce roughing groove wear. SNR is recommended chipbreaker for high depth roughing of S- materials.</p>
Heavy-load machining	HDR	M			<p>Recommended chipbreaker for heavy-load machining P-kind materials Single-side chipbreaker with M-class tolerance has high strength and security on cutting edge, with strong capability to prevent plastic-deformation under high metal removing rate.</p>
Cast iron machining	Without chipbreaker (flat top)	M			<p>For machining cast iron Double-side with M-class tolerance has high cutting edge strength to effectively machine through workpiece imperfections, such as sand pockets in cast iron.</p>
Super hard inserts	Without chipbreaker (flat top)	G			<p>For machining non-ferrous metal and high-hardness material G-class tolerance is the best choice for machining nonferrous metals with high-hardness materials by soldering PCBN and PCD onto cemented carbide substrate.</p>



Introduction of chip-breakers

Positive inserts with a hole

Application	Chipbreaker	Precision	Recommended cutting parameters	Chipbreaker profile	Feature/Shape of insert
For extra finishing	SF 	G			First choice for finish machining G-class tolerance is recommended for precision finishing. 
	HF 	M			Chipbreaker for finishing with wide application With M-class tolerance suitable for internal and external finishing machining for various materials such as steel and cast iron etc. 
For finishing	EF 	M			Recommended chipbreaker for finishing M-kind materials M-class tolerance; sharp cutting edge suitable for finishing materials as stainless steel and soft steel, etc. where edge build-up is problem. 
	NGF 	E G			Recommended chipbreaker for S-material general finishing E, G grade accuracy, for inner hole finishing of S materials. 
For semi-finishing	HM 	M			Chipbreaker for semi-finishing with wide application M-class tolerance; suitable for boring and o.d. semi-finishing materials, like steel and cast iron etc. 
	EM 	M			Recommended chipbreaker for semi-finishing M-kind materials M-class tolerance; higher toughness on cutting edge than EF chipbreaker for higher feed and depth of cut. 

Introduction of chip-breakers

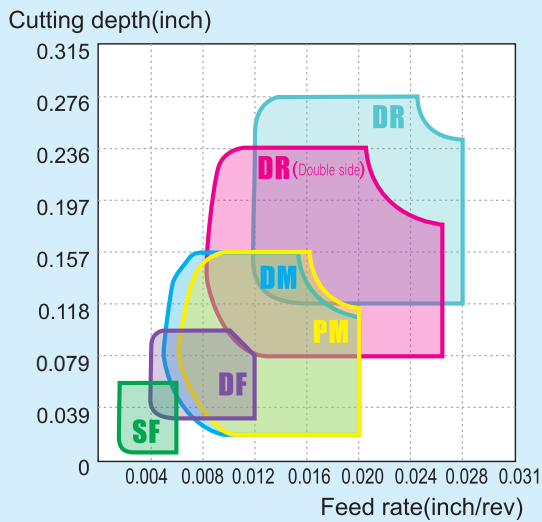
Positive inserts with a hole

Application	Chipbreaker	Precision	Recommended cutting parameters	Chipbreaker profile	Feature/Shape of insert
For roughing	HR	M			General chipbreaker for roughing M-class tolerance; suitable for both boring and o.d. roughing materials as steel, stainless steel and cast iron etc.
	SNR	M			Recommended chipbreaker for S-material high-efficiency roughing M-level accuracy, for inner hole roughing of S materials.
For AI machining	LC	G			Unique chipbreaker for machining AL and AL alloy G-class tolerance, large rake angle and large clearance angle combine for positive cutting action, with good chip control.
	LH	G			Unique chipbreaker for machining AL alloy G-class tolerance, big rake angle and surface polishing, prevents built-up edge, allowing for high surface workpiece quality and long tool life.
Super hard inserts	Without chipbreaker (flat top)	G			For nonferrous metals and materials with high hardness G-class tolerance; for machining nonferrous metals and materials with high hardness by soldering PCBN and PCD material to cemented carbide substrate.

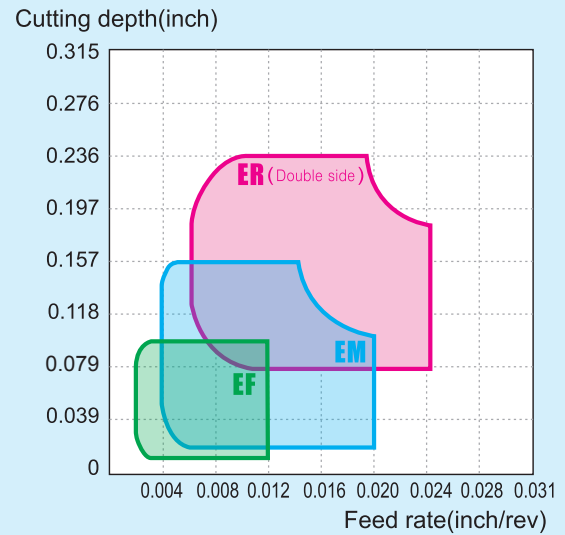


Main chip breaking range reference for general turning inserts

Negative inserts

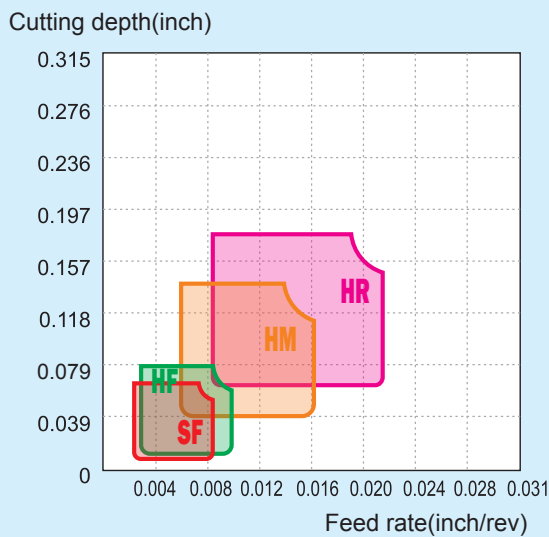


▶ Workpiece material: 45# steel

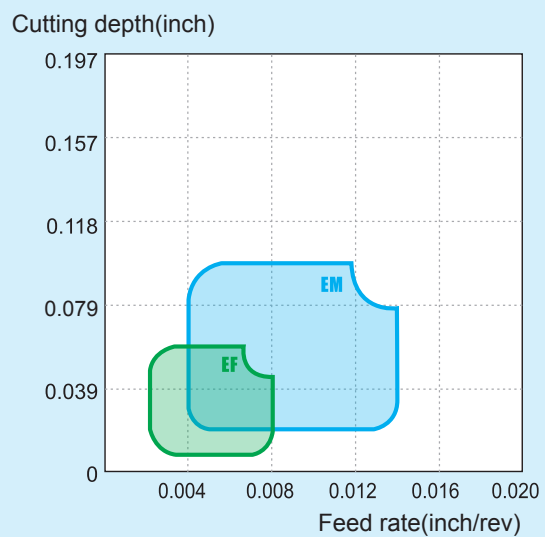


▶ Workpiece material: stainless steel (Austenitic 321)

Positive inserts



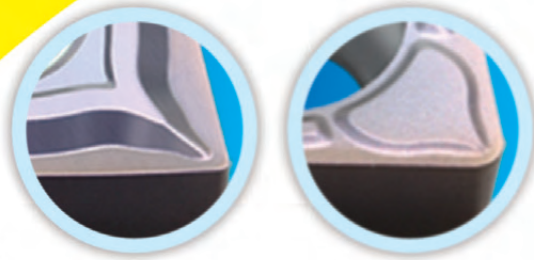
▶ Workpiece material: 45# steel



▶ Workpiece material: stainless steel (Austenitic 321)

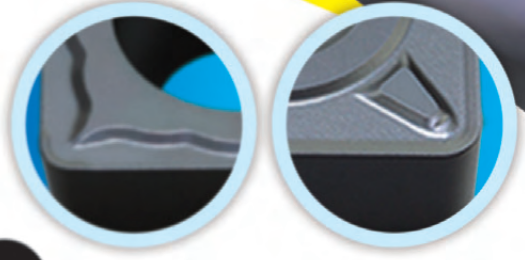
-EF -EM -ER

Specially designed for machining intensively adhesive and high-plasticity materials such as stainless steel, etc



-EF

Rake angle and inclined angle are specially designed for intensively adhesive stainless steel and high-plasticity materials which are hard to be machined. Sharp cutting edge enables it to cut lightly and easily and achieve good surface quality by well controlling chip breaking. It is especially suitable for finishing these kinds of materials.



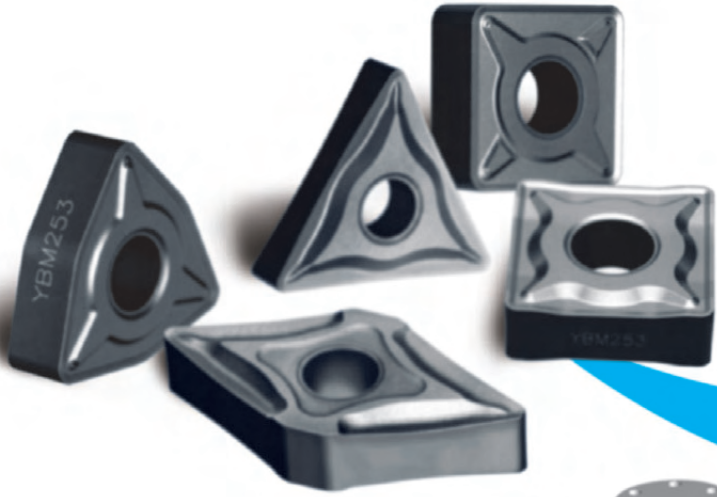
-EM

Inserts meet the requirements of machining intensively adhesive materials. Impact resistance of cutting edge is improved in addition to sharpness, which makes it suitable for semi-finishing and intermittent machining of adhesive materials such as austenitic stainless steel, etc.

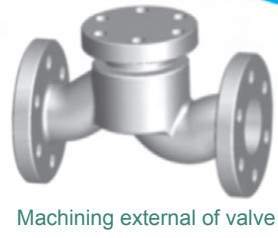
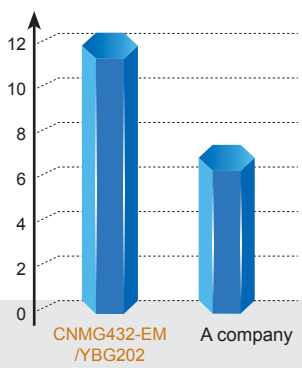


-ER

Specially designed double rake angle with wide land achieves balance between edge security and sharpness, and effectively reduces cutting resistance and wear on groove.

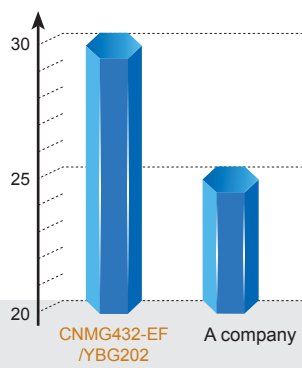


Number of machined parts / Cutting edge



Machining end surface of valve (intermittent machining)
 Workpiece diameter: 5.3in
 Rotating speed: 350 rpm
 Feed rate: 0.01in/r
 Cutting depth: 0.059in

Number of machined parts / Cutting edge



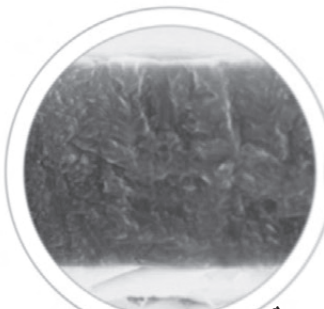
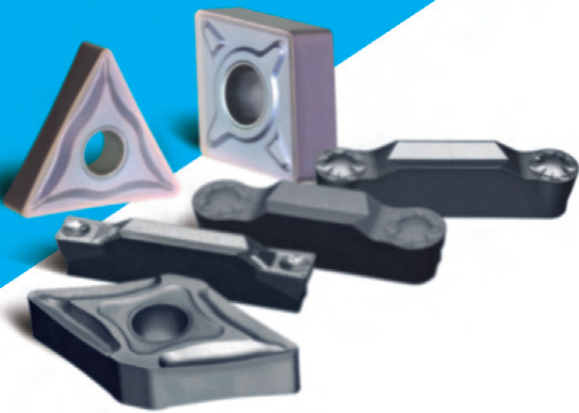
Machining external of valve
 Workpiece diameter: 3.5in
 Rotating speed: 635rpm
 Feed rate: 0.006in/r
 Cutting depth: 0.039in

At the Cutting Edge of Grade and Coating Technology

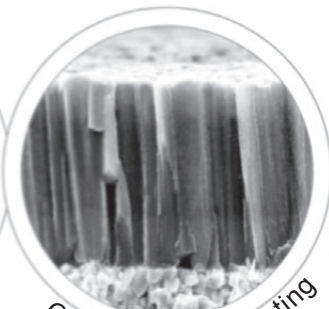
For parting, grooving and the machining of difficult to machine materials.

Nano structure nc-TiAlN coating grade

- ✔ Smooth coating surface results in less friction and easier chip flow.
- ✔ Special Nano structure coating ensures higher toughness, hardness, and bonding to substrate.
- ✔ Thermal and chemical stability of coating allow cutting edges to remain reliable throughout cut.



nc-TiAlN coating



Common TiAlN coating

▶ YBG102

The combination of nc-TiAlN coating and fine grain substrate makes it suitable for turning of various materials and finishing and semi-finishing of high-temperature alloys.

▶ YBG202

Nc-TiAlN coating and ultra-fine grain substrate makes it suitable for finishing and semi-finishing of various materials and turning of super alloy.

▶ YBG105

Finishing and semi-finishing for materials difficult to cut PVD coated grade

PVD coated grade, new TiAlN based multilayer coating, has higher wear resistance and Anti-thermal-oxidation ability. It is suitable for finishing and semi-finishing turning of various materials difficult to cut, such as high temperature alloy, heat resistant alloy, etc.

▶ YBG205

PVD coating grade for finishing of stainless steel

Suitable for relatively small workpieces which require high surface smoothness.

Superfine TiAlN nano coating added with wear-resistant and heat-resistant rare elements has high hardness and excellent heat-resistance, providing effective protection for the cutting edge. Special coating technology ensures stronger combination of coating and substrate. It is suitable for extra finishing of stainless steel.

▶ YBG212

Nc-TiAlN coating combined with super tough substrate which made of super fine grain. It's suitable for finishing and roughing materials which are hard to be machined.

▶ YBS103

Turning grade for Ni-based S material

Fine wear resistance, and good capability against built-up edge and heat resistance. Suitable for turning of Ni-based materials.

▶ YBM215

PVD coating of multiple layer nanometer

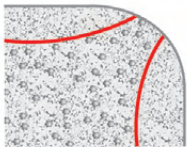
Improved capability of grade's wear resistance and anti-high temperature increases the strength between grade and substrate and the tool stability. This grade is very suitable for turning for stainless steel.

Second generation of YBC

BLACK DIAMOND INSERTS

Achieving both higher cutting speed and longer tool life

- Perfect unification of toughness and anti-plastic deformation. Specially designed cutting edge with "skeleton" realizes perfect unification of toughness and anti-plastic deformation.



- Roughness of insert surface is improved after special treatment on surface, which effectively reduces cutting forces, prevents workpiece adhering to surface of inserts and improves operation stability of inserts.

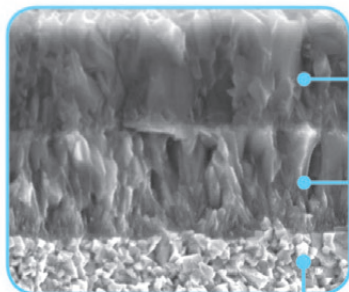


Before surface treatment



After surface treatment

- The perfect combination of fibrous TiCN and fine grain Al_2O_3 obviously improves abrasion resistance and anti-breakage of inserts.



Al_2O_3

TiCN

Cemented carbide substrate

YBC152

Thick TiCN and thick Al_2O_3 coatings improve the impact toughness and abrasion resistance, which makes it suitable for finishing and semi-finishing of steel at high speed. Cutting speed can increase by more than 25%, while the tool life can increase by more than 30% at the same cutting speed.

YBC252

Comprising of thick TiCN and thick Al_2O_3 coatings, the grade has high capability against plastic deformation and good hardness of cutting edge. It is preferred grade for machining of steel from finishing to roughing. Under the same cutting conditions, the cutting speed can be increased by more than 25%, while the tool life can be 30% longer under the same cutting speed.

YBC352

Thickness TiCN and Al_2O_3 coating, with strongest toughness and plastic deformation resistance, the ideal grade for high efficient steel rough machining under the bad condition.

Test comparison of inserts abrasion

Workpiece material : 45#steel

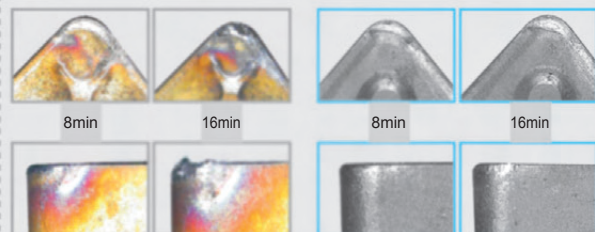
Inserts: CNMG432-DM

Cutting parameters: $V_c=1300$ SFPM

$a_p=0.04$ (inch) $f_n=0.008$ (inch/r)

Grade from other company

YBC152



Coated Cemented Carbide CVD

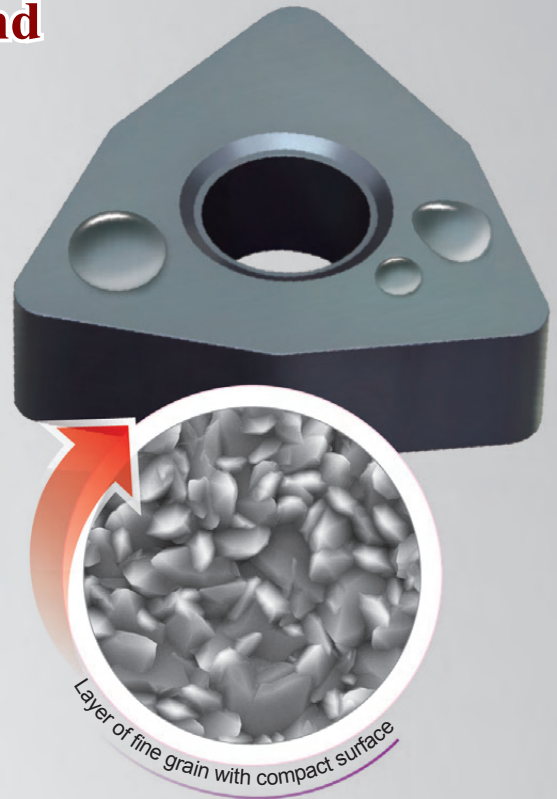
BLACK DIAMOND INSERTS **YBD**

First choice for high-efficiency and highspeed machining of cast iron

- The combination of thick coating and substrate with good hardness and impact resistance gives the inserts excellent impact resistance and stability under high temperature, and improves wear resistance of inserts. Inserts also satisfy the requirements of high speed and high feed rate when machining cast iron.
- The appearance of shining full black is easily identified.

Significant results

- Working efficiency has been improved. Both the coating and the substrate are suitable for machining cast iron at high speed and high feed rate. Cutting speed can be increased by 30% to 40%.
- Cost is reduced as tool life is increased by 40%-50%.
- High machining stability.



YBD052

CVD coated grade, which is characterized by super fine grain and smooth surface, is the combination of hard substrate and coating (extra thick Al_2O_3 + thick TiCN). The grade is optimized for best wear resistance when machining gray cast iron at high speed under dry condition.

YBD102

CVD coated grade, which is the combination of hard substrate and coating (thick Al_2O_3 + thick TiCN), shows excellent wear resistance and impact resistance when machining nodular cast iron at high speed.

YBD152

CVD coated grade, which is the combination of hard substrate and coating (medium thick Al_2O_3 + thick TiCN), has good flaking resistance. It is suitable for turning of cast iron at high speed, and light intermittent cutting can be supported even at moderate speed. It is also suitable for milling of cast iron.

YBD252

CVD coated grade, which is the combination of hard substrate and coating (medium thick Al_2O_3 + thick TiCN), achieves the balance between wear resistance and toughness. It is suitable for wet milling of cast iron, which requires toughness (such as nodular cast iron) at moderate or low speed. It is also suitable for intermittent turning.

YBC151

Substrate with special structure, in combination with Ti(CN), thick layer Al₂O₃, and TiN coating. High resistance to diffusion of rake face and resistance to plastic deformation it is good for finishing and semi-finishing (turning as well as boring) of stainless steel.

YBC251

Coated carbide grade with special strength and toughness, in an optimal combination with MT-Ti(CN), thick layer Al₂O₃, and TiN coating. Suitable grade for wide application. It is recommended for the finishing, semi-finishing and light roughing of steel, cast steel and stainless steel.

YBC351

Substrate with high strength and resistance against plastic deformation, in combination with MT-Ti(CN), thick layer Al₂O₃, TiN coating. It is suitable for light roughing and roughing steel, cast steel and stainless steel.

YBM151

Substrate with special matrix, in combination with Ti(CN), thick layer Al₂O₃, and TiN coating. With the resistance to rake face diffusion and plastic deformation, it is good for finishing and semi-finishing (turning as well as boring) of stainless steel.

YBM251

Substrate with good toughness and strength, in combination with Ti(CN), thin layer Al₂O₃, TiN coating, It is a premium grade for semi-finishing to light roughing (turning and boring) of stainless steel at continuous and intermittent machining conditions.

YBM253

Ideal grade for turning of stainless steel with high cutting depth and high feed rate under bad working condition.

- Ultra-fine grain coating technology provides better wear resistance and toughness;
- Improved remain internal stress design ensures good toughness and anti-cracking performance;
- Polishing treatment on coating surface makes it suitable for cutting adhesive materials.

Main grades and applications

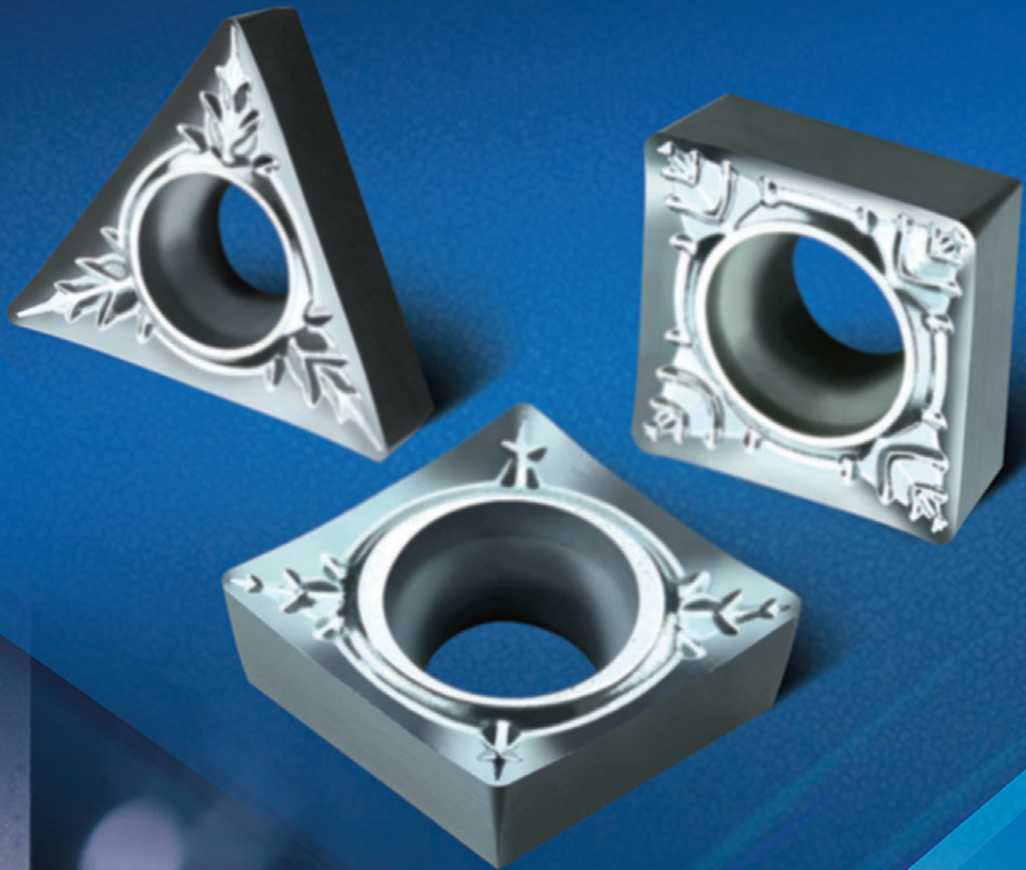
YNG151

TiCN based cermets, of which the grains are refined with a special process with more even grain size. The combination of cemented carbide hard phase and the binder phase is even more strengthened, further improving the wear resistance and lifetime of the inserts. They are suitable for the finishing and super finishing of steel, stainless steel and cast iron.

YNG151C

TiCN based cermets+Nano PVD coating, of which the surface is specially pre-treated with an even and smooth surface. The friction coefficient of the workpiece in relation to the insert is reduced, causing good chip flow, increased wear resistance, and prolonged lifetime of insert. They are suitable for the finishing and fine finishing of steel materials, stainless steel and cast iron.

-LC *New-generation chipbreaker for AI machining*

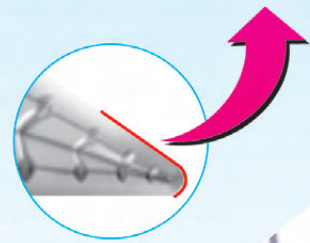


-LC New-generation chipbreaker for aluminum

- LC inserts are designed with a special chipbreaker. Large rake angle and clearance angle allow for sharper cutting edge, ensuring smoother cutting, while controlling chips.
- A polished rake face reduces friction and adhesion to cutting tool. Chips are allowed to flow freely across rake face and improve the quality of the workpiece finish.
- G-class precision tolerance of insert permits higher accuracy of surface finish and better repeatability when insert is indexed. Machining vibration is reduced also.

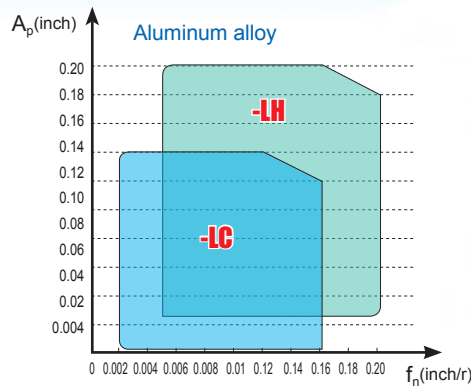
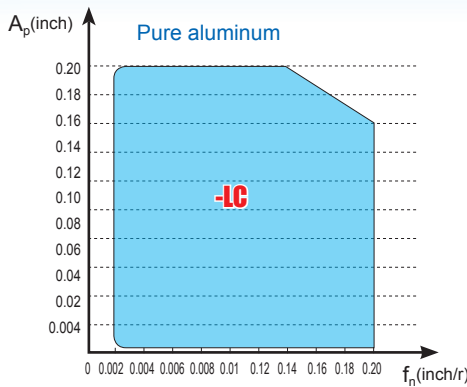
Angular cutting edge improves chip flow and control.

Cutting edge segues from nose to main edge without interruption.



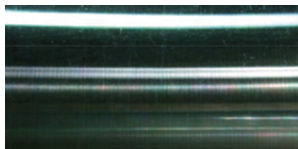
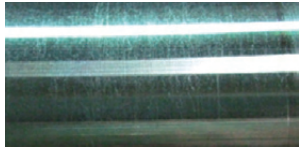


-LC and -LH chipbreaker characteristics and machining range

-LC chipbreaker can be used in machining of pure Al, while -LH chipbreaker can not.
-LC chipbreaker expand the chip breaking range of Al alloy machining.



Workpiece material: Pure aluminum

Cutting parameters	V=1148SFPM Ap=0.008inch F=0.008inch/r	
Chips		
Surface quality		
	-LC chipbreaker	Competitor's tool
	<ul style="list-style-type: none"> -LH chipbreaker is more suitable for machining aluminum alloy with larger cutting depth and higher feed rate. -LC chipbreaker is more suitable for machining aluminum alloy with smaller cutting depth and lower feed rate. 	

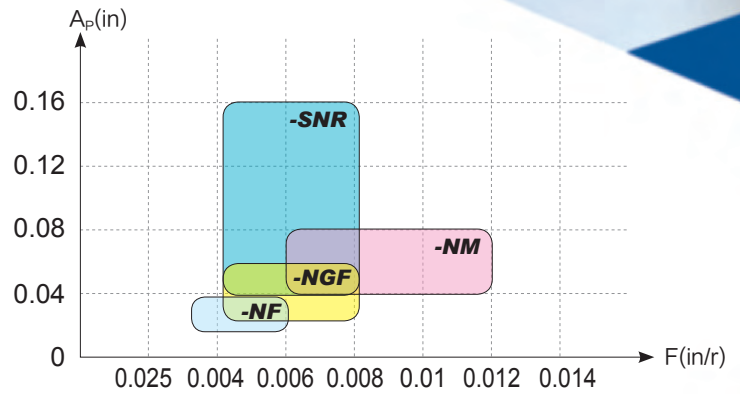
S- Ni-based Superalloy Machining

Difficulties Overcame

Features of Ni-based superalloy machining

- High cutting resistance (containing a large amount of alloying elements, severe hardening, great plastic deformation ;
- High cutting temperature;
- Severe wear of inserts.

Chipbreaker for machining of Ni-based superalloy should have tough and sharp insert nose, smooth rake face and proper inclination angle.




-NM for semi-finishing -SNR for high efficiency roughing
 -NF for finishing -NGF for general finishing



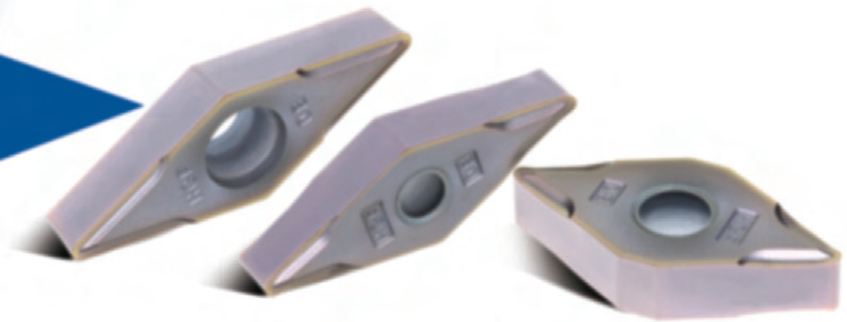
-SNR Chipbreaker for roughing with large depth of cut

- Positive rake angle design, sharp cutting edge, low cutting resistance, effectively reducing groove wear;
- Cutting edge with variable rake angles increase cutting edge strength at large depths of cut. Edge strength increases as the depth of cut increases;
- Large slot width combined with unique edge rib design not only provides excellent chip breaking performance but also can effectively improve edge strength.



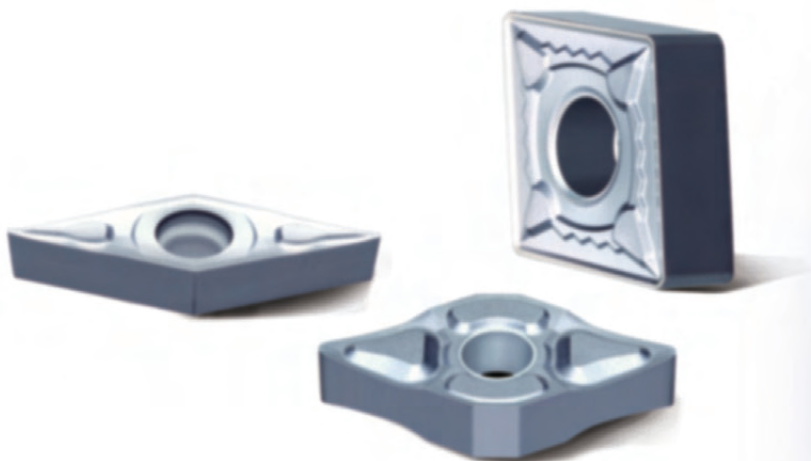
-NGF Chipbreaker for General Finishing

- Proper inclination angle design, sharp cutting edge, small cutting resistance;
- E-level tolerance of insert, high clamping accuracy, proper chipbreaker width, good chip breaking performance, excellent surface quality;
- Special edge treatment, high wear resistance.



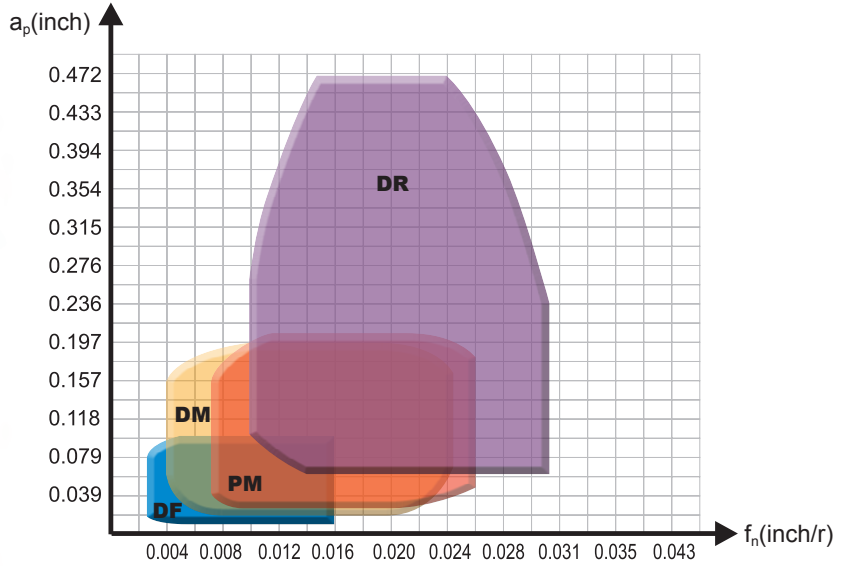
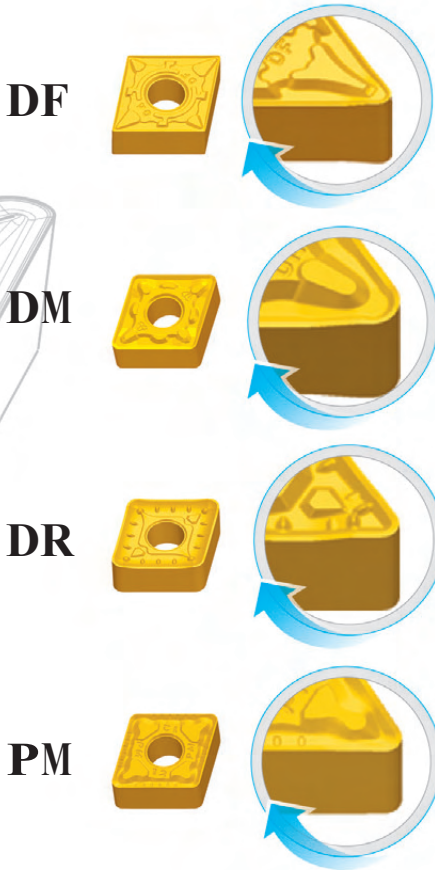
-NFINM Chipbreaker for General Finishing

- -NF chipbreaker has sharp cutting edge, while -NM chipbreaker high cutting edge strength.
- Smooth surface of chipbreaker ensures unobstructed chip flow.
- High wear resistance of cutting edge after special treatment.

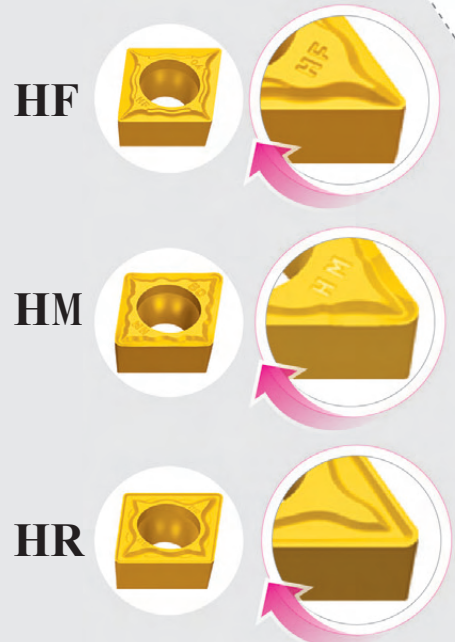
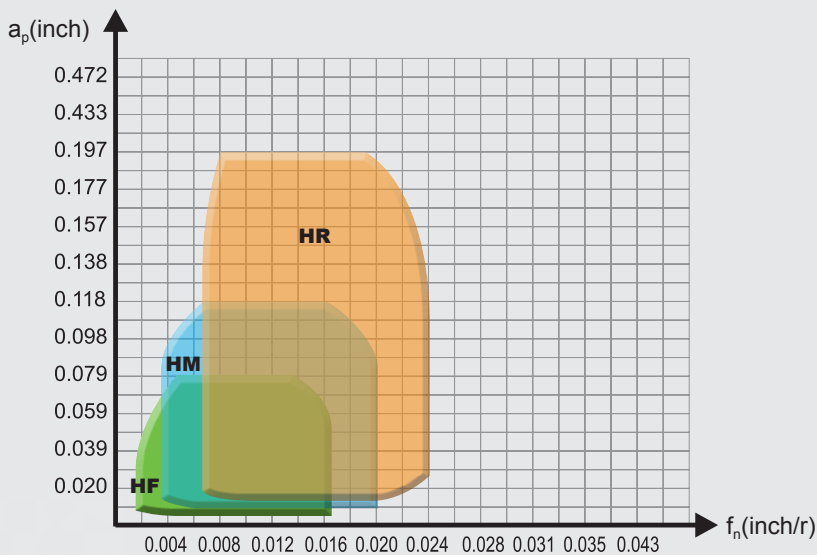


D series chip-breaker

can be used for machining steel from finishing to roughing.



H series chip-breaker



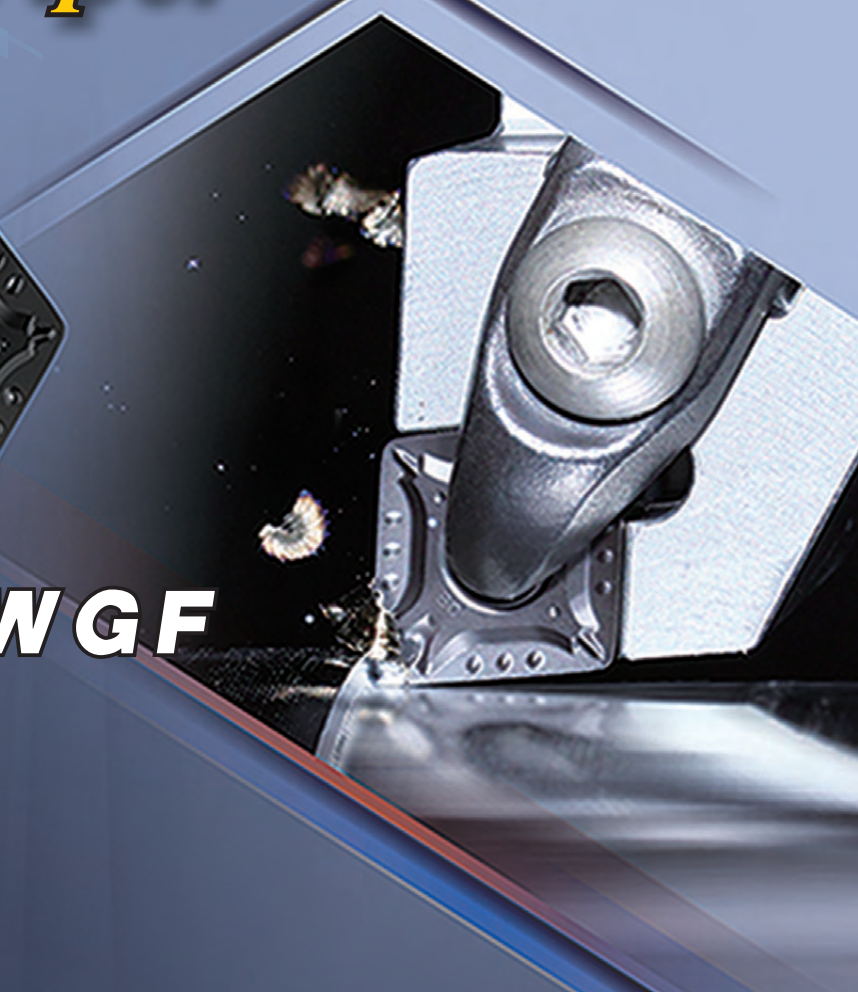
-WGM



*New product for
turning*

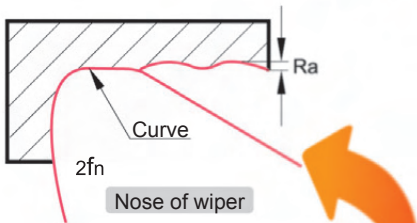
Wiper

-WGF



-WGF/WGM

chipbreaker series Turning inserts with wiper



High efficiency

Roughness remains the same when feed rate is doubled.



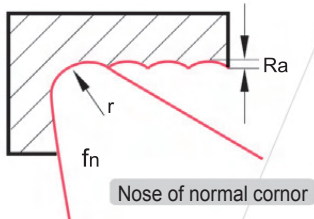
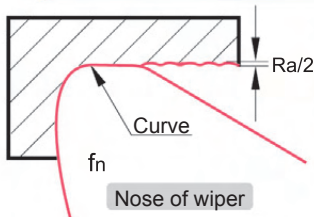
Wiper is assembled by three curves to form a circular arc edge. The nose of wiper provides less profile height on the surface that is formed by the cutting edge, resulting in a smooth turning surface.

Inserts with wiper has high efficiency when used for finish and semi-finish turning. The surface quality remains the same even at double feed rate.

Wiper technique =
high machining efficiency + high surface quality

High quality

Roughness value is reduced to half when feed rate remains the same.



When used for finishing, it can improve roughness of workpiece surface and achieve turning instead of grinding.

When used for semi-finishing, efficiency could be improved by doubling the feed rate, the roughness of workpiece surface remaining the same.

Guide to use

● Select reasonable approach angle of the tools

Minor angle being close to 0 degree is the reason that inserts with wiper can reduce roughness of the surface, which is determined by the shape of insert and approach angle of the tool holder. Therefore, acceptable roughness of surface is the result of reasonable approach (minor) angle. The finishing function of wiper would be reduced or invalid if unreasonable approach (minor) angle is chosen. For example, the approach angle should be 95° for CNMG / WNMG inserts, while 93° is the best for DNMX / TNMX inserts.

● Be careful with DNMX / TNMX inserts

DNMX / TNMX inserts with wiper don't have wide application. It cannot achieve a wiper result when minor angle is not 0 degree, like chamfer and profile surface, and will even cause over-cutting or no-cutting on workpiece, affecting the shape and size precision of workpiece. Please contact technical service regarding these problems.

-SF

chipbreaker for finishing

○ Unique nose design and sharp cutting edge lead to small cutting resistance and effectively reduce vibration of the tool holder.

○ With high re-positioning precision, the insert is compatible with specially developed cemented carbide tool holders, which can increase the capability of vibration resistance and improve machining quality.

○ Special treatment on insert's surface can reduce the possibility of chips adhering to the rake face of insert. Good performance of chip breaking and chip flowing ensures improved surface quality of workpiece.

○ By adopting excellent grade, it is suitable for extra finishing of various materials.

