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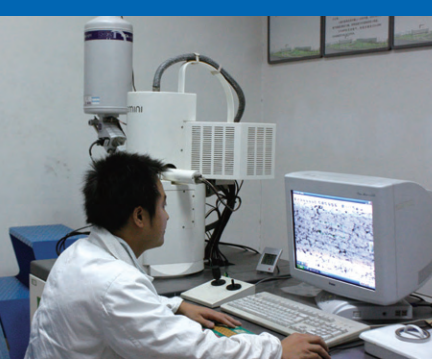
CUTTING TOOLS

- TURNING
- BORING
- THREADING
- GROOVING
- MILLING
- DRILLING



**ZHUZHOU CEMENTED CARBIDE
CUTTING TOOLS CO., LTD.**

Brief introduction



Zhuzhou Cemented Carbide Cutting Tools Co.,Ltd. (**ZCC·CT**) is a subsidiary company of Zhuzhou Cemented Carbide Group Corp.Ltd.(zcc), 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.
- 2005 - Further introduction of advanced technology and equipment for the production of ceramic inserts adds another dimension to **ZCC·CT**

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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BORING TOOLS

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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.

A

B

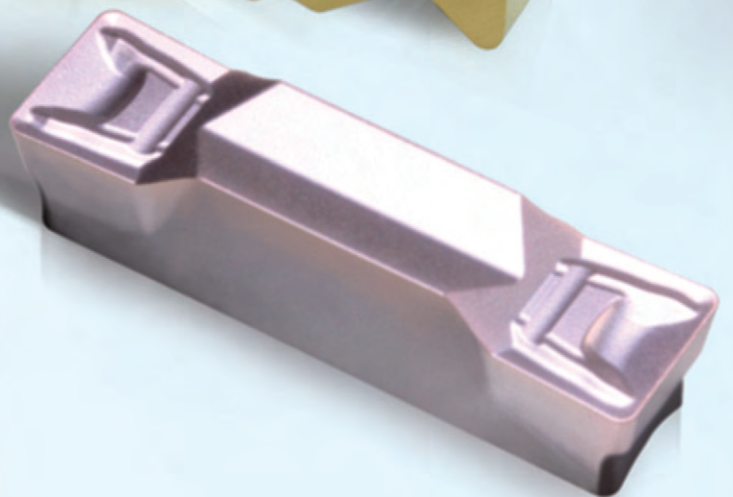
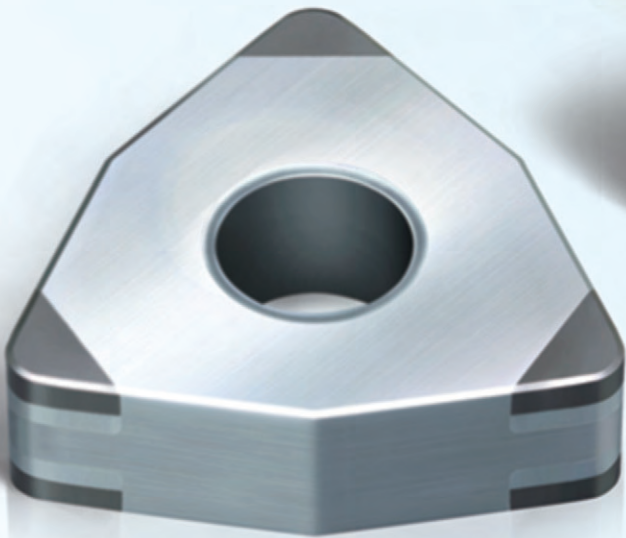
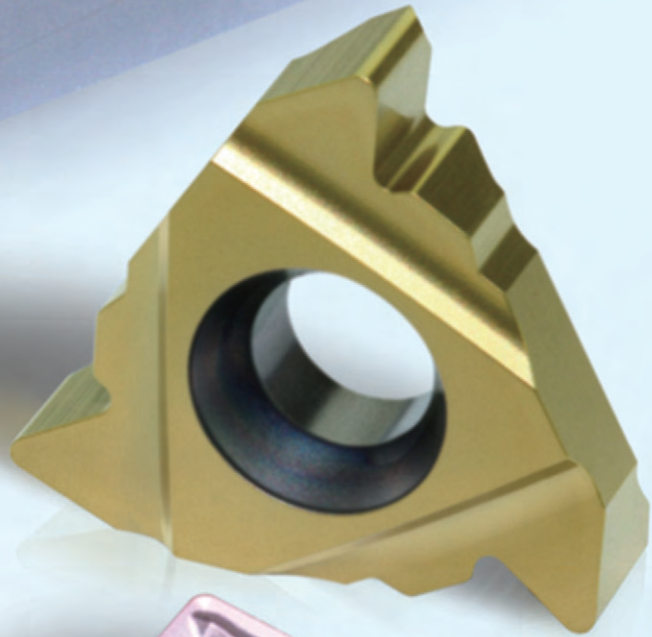
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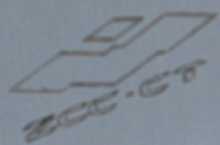
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E

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Turning Tools





DV JNR2525M16
40529344

V16BM CM5*22C SM5*8.65XA1 SPR6 C6RA



SCS-CT
DC
40



Turning

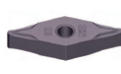
GENERAL TURNING TOOLS

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Product overview

Turning inserts

For finishing



DNEG-NGF

VNEG-NGF

CNMG-DF

CNMG-SF

CNMG-EF

CNEG-NF

DNMG-DF

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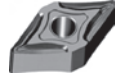
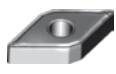
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DNMG-SF

DNMG-EF

DNEG-NF

SNMG-DF

SNMG-EF

SNMG-SF

TNMG-DF

TNMG-SF

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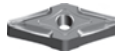
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TNMG-EF

VNMG-DF

VNMG-EF

VNEG-NF

VNMG-SF

WNMG-DF

WNMG-SF

WNMG-EF

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Wiper



WNEG-NF

CNMG-WGF

DNMX-WGF

TNMX-WGF

WNMG-WGF

CNMG-WGM

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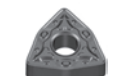
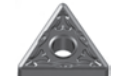
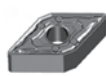
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DNMX-WGM

TNMX-WGM

WNMG-WGM

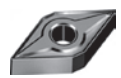
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For semi-finishing



CNMG-PM

CNMG-DM

CNMG-EM

CNMG-NM

DNMG-PM

DNMG-DM

DNMG-EM

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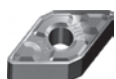
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DNMG-NM

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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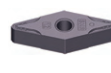
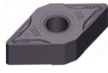
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Negative inserts

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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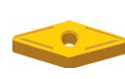
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Conventional chipbreaker



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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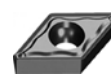
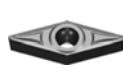
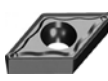
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Positive inserts

For fine finishing



CCGT-SF

DCGT-SF

VCGT-SF

CPGT-SF

DPGT-SF

TPGT-SF

TPGH-L

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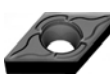
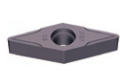
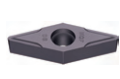
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For finishing



VCGT-NGF

VBET-NGF

CCMT-HF

CCMT-EF

DCMT-HF

DCMT-EF

SCMT-HF

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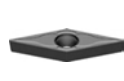
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SCMT-EF

TCMT-HF

TCMT-EF

VCGT-HF

VBMT-HF

VBMT-EF

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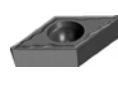
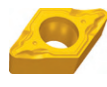
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For semi-finishing



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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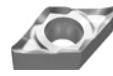
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For Al machining



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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A

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
P127	P127	P128	P128	P128	P129

					
ZT□D-EG	ZIMF-SM	ZR□D-MG	ZR□D-NM	ZR□D-EG	ZIGQ-NF
P129	P129	P130	P130	P131	P131

Threading inserts

Right hand type	ISO metric thread		General pitch thread		Whitworth thread	
						
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
Page	P154	P155	P156	P156	P157	P157

Right hand type	Unified thread		British standard taper pipe threads		NPT American standard taper pipe threads	
						
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
Page	P158	P158	P159	P159	P160	P160

Right hand type	American standard aerospace and aviation threads		American ACME		American STUB-ACME (Short tooth threads)	
						
	External thread		External thread	Internal thread	External thread	Internal thread
Page	P161		P162	P162	P163	P163

Right hand type	API 60°		API Round		API Buttress Casing	
						
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
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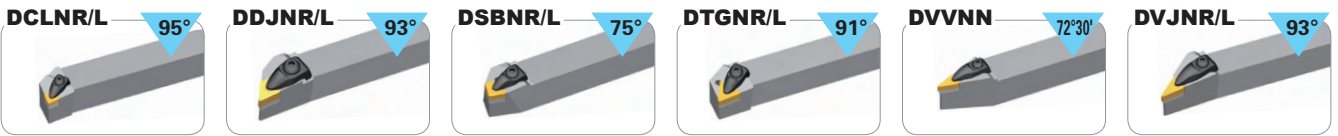
Right hand type	ISO metric thread Full Form(Thin type)		General pitch thread Without end(Thin type)		Whitworth thread(Thin type)	
Thin type						
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
Page	P167	P168	P169	P169	P170	P170

Right hand type	Unified thread(Thin type)		British standard taper pipe threads (Thin type)		American standard taper pipe threads (Thin type)	
						
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
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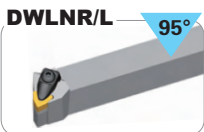
Turning toolholders

External turning toolholders

D-Multi clamp

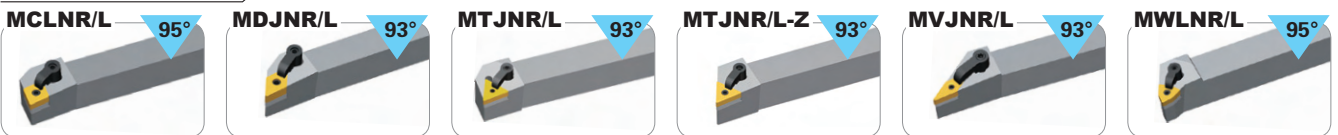


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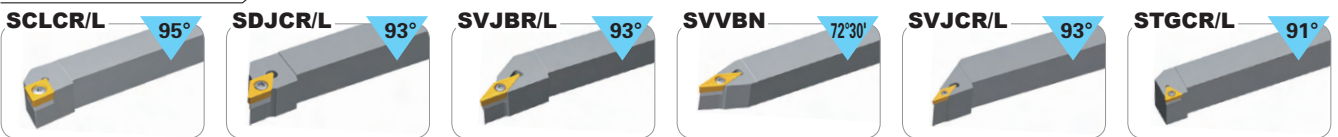
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M-Multi clamp



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S-Screw clamp



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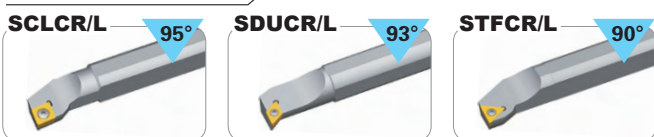
Boring Bars

P-Lever clamp



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S-Screw clamp



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Threading tools



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A

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		Cemented carbide
		CVD	PVD							PVD	CVD	
P Steel	01											
	10	YBC151										
	20	YBC251	YBC152									
	30		YBC252									
	40		YBC351	YBG102								
M Stainless steel	01											
	10	YBM151										
	20	YBM251										
	30	YBM253										
	40											
K Cast iron	01											
	10	YBD052	YBD102									
	20		YBD152									
	30		YBD252									
	40											
N non-ferrite materials	01											
	10											
	20											
	30											
	40											
S Heat-resistant steel	01											
	10											
	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	Feature/Shape of insert
For finishing	SF 	M	$a_p=0.002\sim0.039(\text{inch})$ $f_n=0.002\sim0.014(\text{inch/r})$	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	$a_p=0.012\sim0.079(\text{inch})$ $f_n=0.002\sim0.014(\text{inch/r})$	Recommended chipbreaker for finishing P-kind materials Double-side chipbreaker with M-class tolerance for finish machining carbon and alloy steels. 
	EF 	M	$a_p=0.002\sim0.039(\text{inch})$ $f_n=0.002\sim0.012(\text{inch/r})$	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	$a_p=0.004\sim0.039(\text{inch})$ $f_n=0.002\sim0.012(\text{inch/r})$	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. 
	NG F 	E	$a_p=0.004\sim0.039(\text{inch})$ $f_n=0.002\sim0.012(\text{inch/r})$	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	WG F 	M	$a_p=0.012\sim0.079(\text{inch})$ $f_n=0.004\sim0.016(\text{inch/r})$
For semi-finishing		DM 	M	$a_p=0.059\sim0.197(\text{inch})$ $f_n=0.006\sim0.020(\text{inch/r})$
	PM 	M	$a_p=0.059\sim0.197(\text{inch})$ $f_n=0.006\sim0.020(\text{inch/r})$	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. 









Introduction of chip-breakers

Negative inserts with a hole

Application	Chipbreaker	Precision	Recommended cutting parameters	Feature/Shape of insert
For semi-finishing		M	$a_p=0.004\sim0.059(\text{inch})$ $f_n=0.002\sim0.012(\text{inch/r})$	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. 
		M	$a_p=0.012\sim0.079(\text{inch})$ $f_n=0.004\sim0.016(\text{inch/r})$	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. 
		M	$a_p=0.020\sim0.059(\text{inch})$ $f_n=0.004\sim0.012(\text{inch/r})$	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. 
		M	$a_p=0.059\sim0.197(\text{inch})$ $f_n=0.008\sim0.020(\text{inch/r})$	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. 
Light-load roughing		M	$a_p=0.118\sim0.472(\text{inch})$ $f_n=0.012\sim0.031(\text{inch/r})$	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. 
		M	$a_p=0.118\sim0.591(\text{inch})$ $f_n=0.012\sim0.031(\text{inch/r})$	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. 
For roughing		M	Double sided $a_p=0.098\sim0.315(\text{inch})$ $f_n=0.008\sim0.024(\text{inch/r})$ Single sided $a_p=0.098\sim0.787(\text{inch})$ $f_n=0.008\sim0.047(\text{inch/r})$	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. 
		M	$a_p=0.020\sim0.118(\text{inch})$ $f_n=0.002\sim0.012(\text{inch/r})$	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 groove wear. SNR is recommended chipbreaker for high depth roughing of S- materials. 

Introduction of chip-breakers


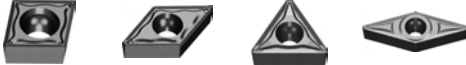










Negative inserts with a hole

Application	Chipbreaker	Precision	Recommended cutting parameters	Feature/Shape of insert
Heavy-load machining		M	$a_p=0.197\sim0.591(\text{inch})$ $f_n=0.012\sim0.039(\text{inch/r})$	<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		M	$a_p=0.012\sim0.472(\text{inch})$ $f_n=0.002\sim0.024(\text{inch/r})$	<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		G	$a_p=0.002\sim0.020(\text{inch})$ $f_n=0.002\sim0.012(\text{inch/r})$	<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	Feature/Shape of insert
For extra finishing	SF 	G	$a_p=0.002\sim0.039(\text{inch})$ $f_n=0.002\sim0.012(\text{inch/r})$	First choice for finish machining G-class tolerance is recommended for precision finishing. 
	HF 	M	$a_p=0.004\sim0.079(\text{inch})$ $f_n=0.002\sim0.012(\text{inch/r})$	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	$a_p=0.004\sim0.079(\text{inch})$ $f_n=0.002\sim0.012(\text{inch/r})$	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	$a_p=0.004\sim0.039(\text{inch})$ $f_n=0.002\sim0.012(\text{inch/r})$	Recommended chipbreaker for S-material general finishing E, G grade accuracy, for inner hole finishing of S materials. 
For semi-finishing	HM 	M	$a_p=0.039\sim0.157(\text{inch})$ $f_n=0.008\sim0.020(\text{inch/r})$	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	$a_p=0.039\sim0.157(\text{inch})$ $f_n=0.008\sim0.020(\text{inch/r})$	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

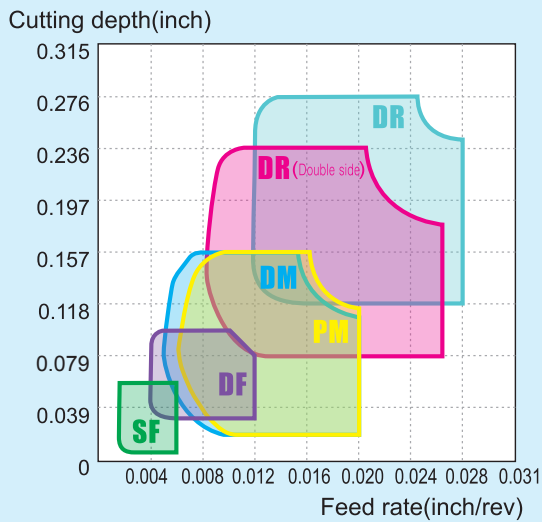
Positive inserts with a hole

Application	Chipbreaker	Precision	Recommended cutting parameters	Feature/Shape of insert
For roughing	 	 M	$a_p=0.118\sim0.276(\text{inch})$ $f_n=0.012\sim0.028(\text{inch/r})$	General chipbreaker for roughing M-class tolerance; suitable for both boring and o.d. roughing materials as steel, stainless steel and cast iron etc. 
	 	 M	$a_p=0.02\sim0.118(\text{inch})$ $f_n=0.002\sim0.012(\text{inch/r})$	Recommended chipbreaker for S-material high-efficiency roughing M-level accuracy, for inner hole roughing of S materials. 
For Al machining	 	 G	$a_p=0.02\sim0.189(\text{inch})$ $f_n=0.002\sim0.020(\text{inch/r})$	Chipbreaker for machining Al G-class tolerance, large rake angle and large clearance angle combine for positive cutting action, with good chip control. 
	 	 G	$a_p=0.004\sim0.315(\text{inch})$ $f_n=0.002\sim0.016(\text{inch/r})$	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	 	 G	$a_p=0.002\sim0.020(\text{inch})$ $f_n=0.002\sim0.012(\text{inch/r})$	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. 

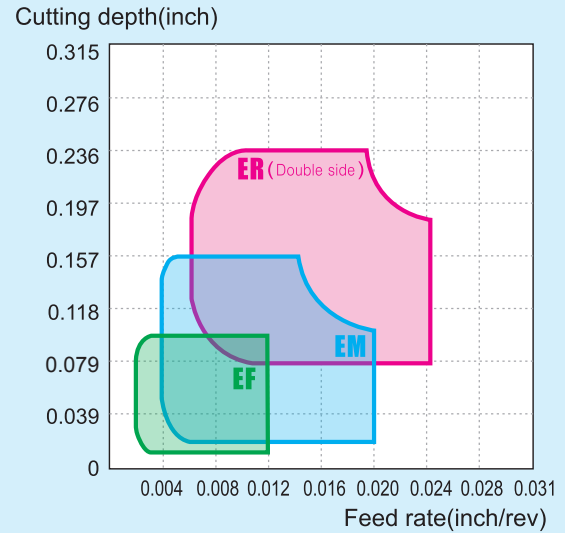


Main chip breaking range reference for general turning inserts

Negative inserts

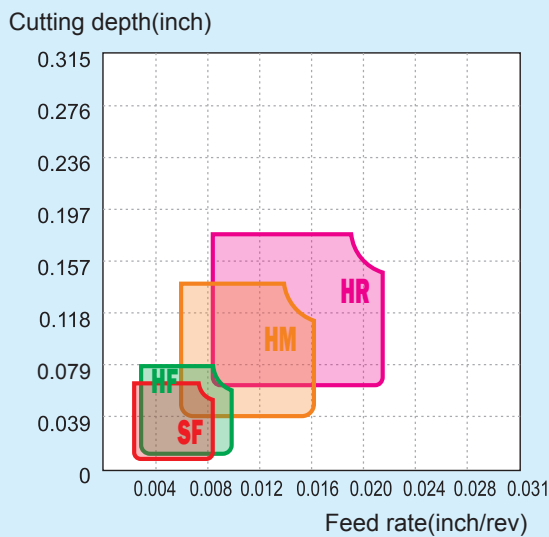


▶ Workpiece material: 45# steel

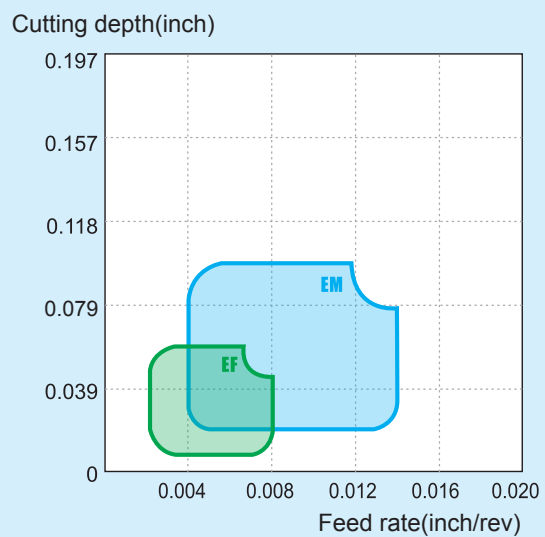


▶ Workpiece material: stainless steel (Austenitic 321)

Positive inserts



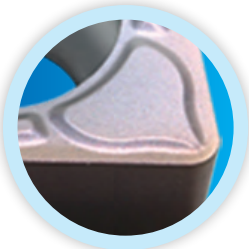
▶ Workpiece material: 45# steel



▶ Workpiece material: stainless steel (Austenitic 321)

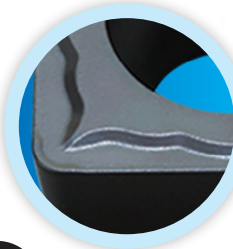
-EF -EM -ER

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



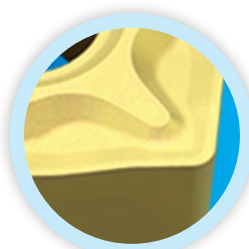
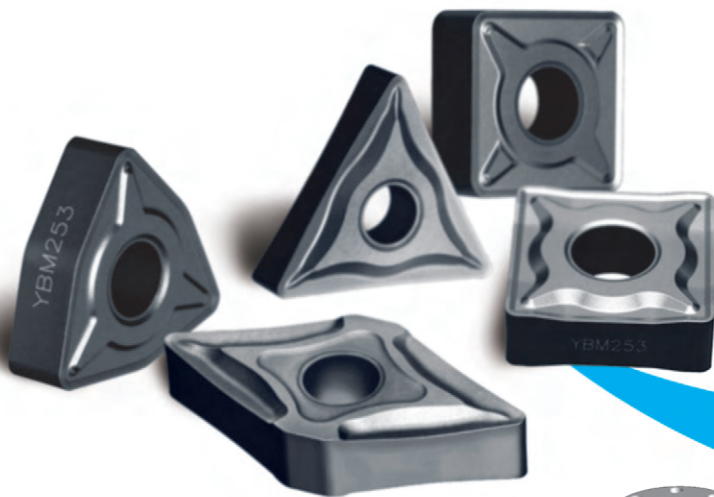
-EF

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

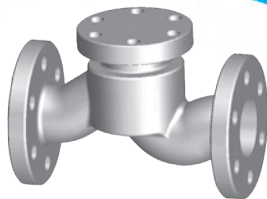
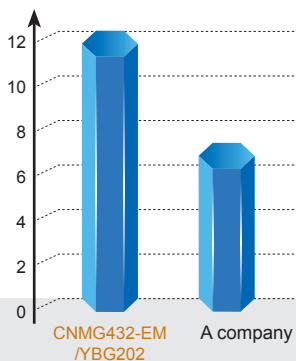
Inserts meet the requirements of machining intensively adhesive materials. Impact resistance of cutting edge is improved in addition to sharpness, which makes it suitable for semi-finishing and intermittent machining of adhesive materials such as austenitic stainless steel, etc.



-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.

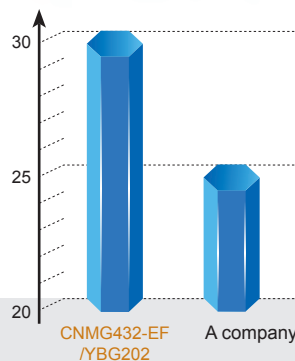
Number of machined parts / Cutting edge



Machining external of valve

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



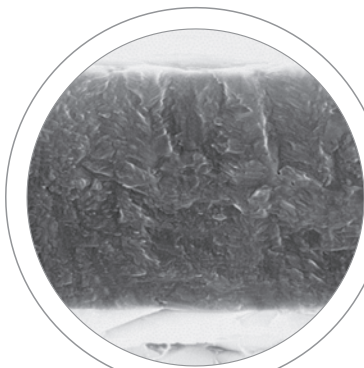
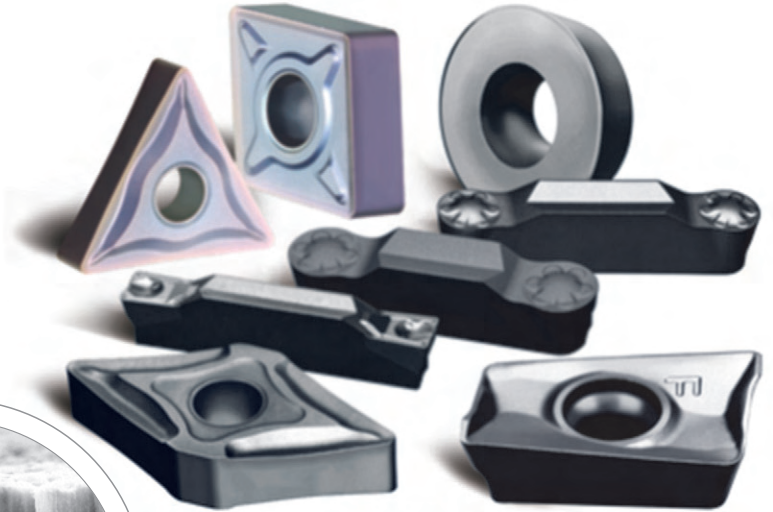
Machining external of valve
Workpiece diameter: 3.5in
Rotating speed: 635rpm
Feed rate: 0.006in/r
Cutting depth: 0.039in

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

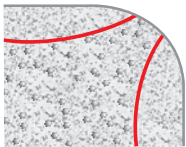
YBG102 YBG202 YBG205 YBG302
YBG105 YBG212

Second generation of **YBC**

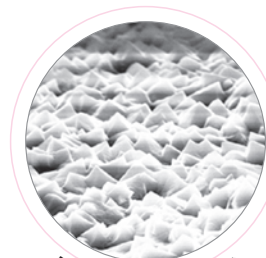
BLACK DIAMOND INSERTS

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.

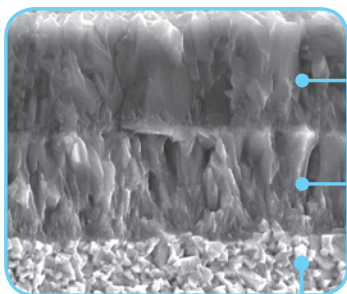


Before surface treatment



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

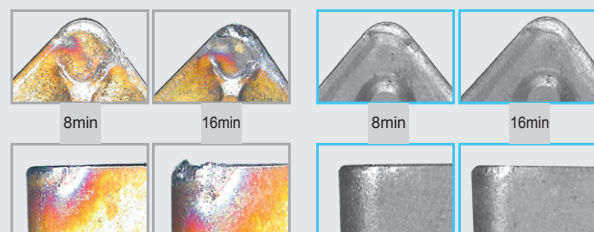
Inserts: CNMG432-DM

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

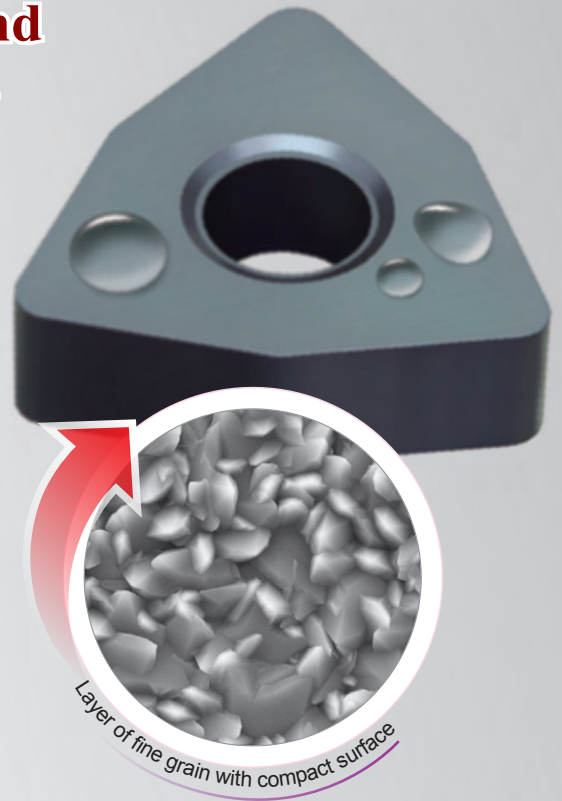
BLACK DIAMOND INSERTS **YBD**

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 Al_2O_3 , 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 Al_2O_3 , 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 Al_2O_3 , 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 Al_2O_3 , 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 Al_2O_3 , 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

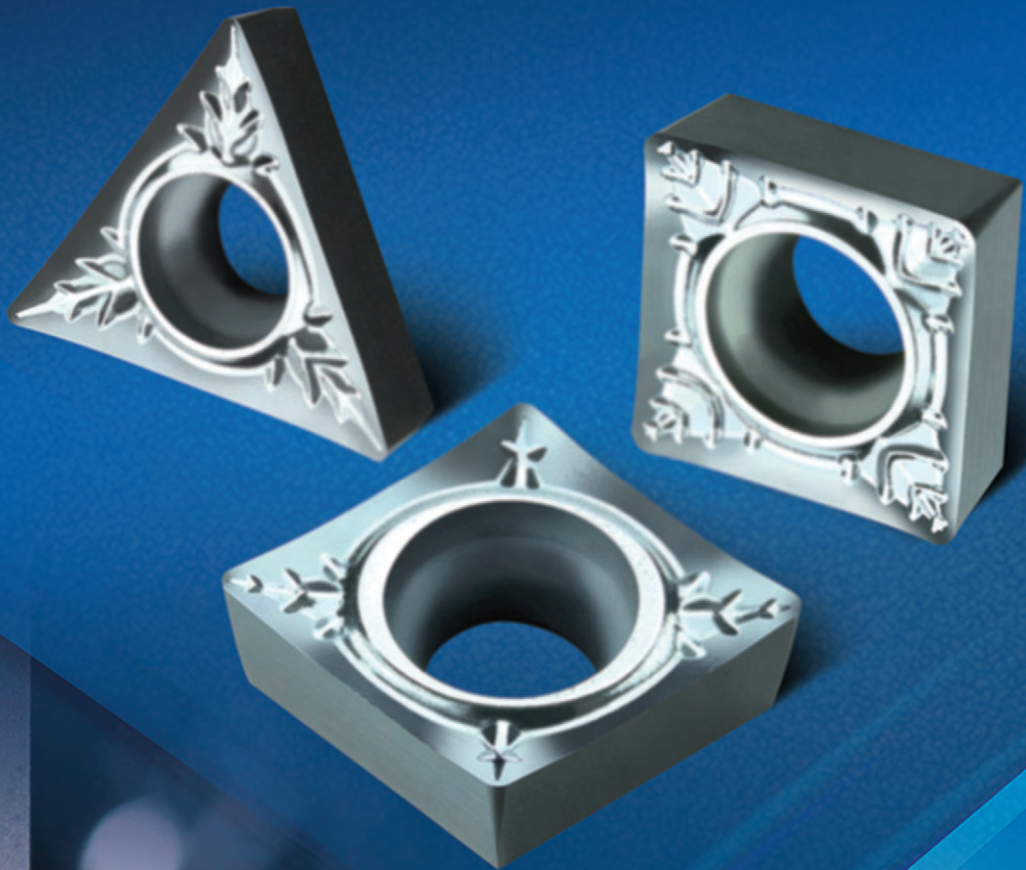
YNG151

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*

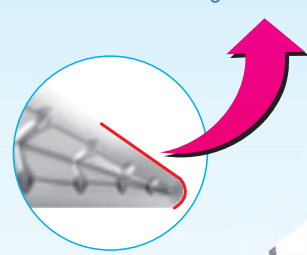
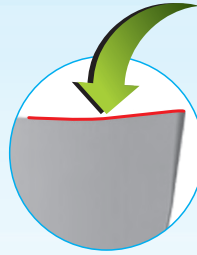


-LC New-generation chipbreaker for aluminum

- 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.

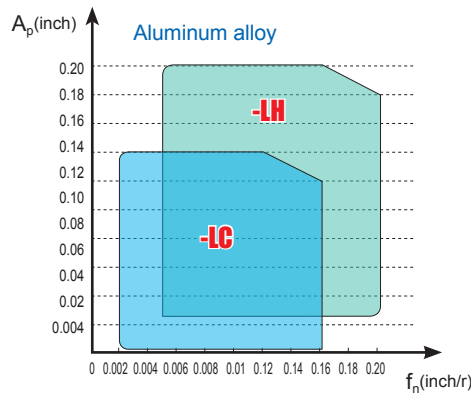
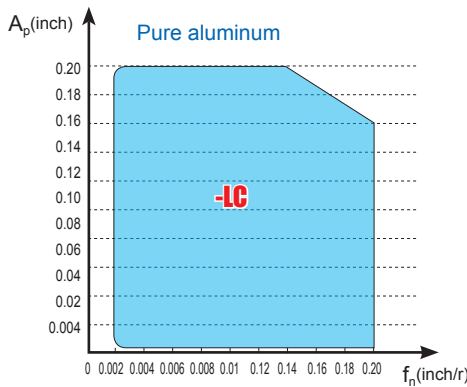
Angular cutting edge improves chip flow and control.

Cutting edge segues from nose to main edge without interruption.



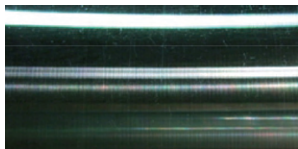
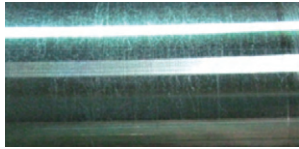


-LC and -LH chipbreaker characteristics and machining range

-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. 	

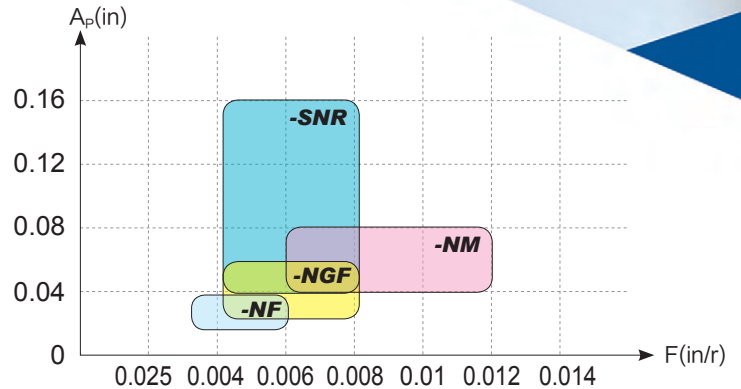
S- Ni-based Superalloy Machining

Difficulties Overcame

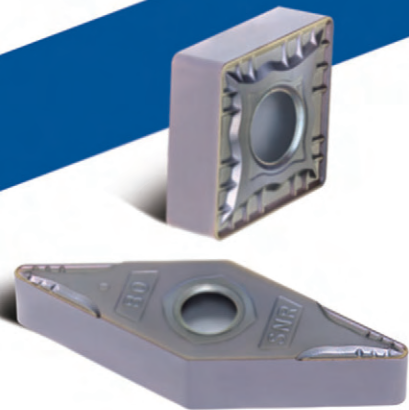
Features of Ni-based superalloy machining

- 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



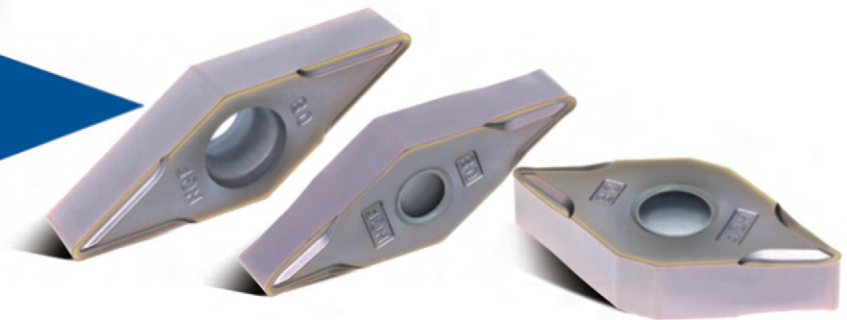
-SNR Chipbreaker for roughing with large depth of cut

- 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.



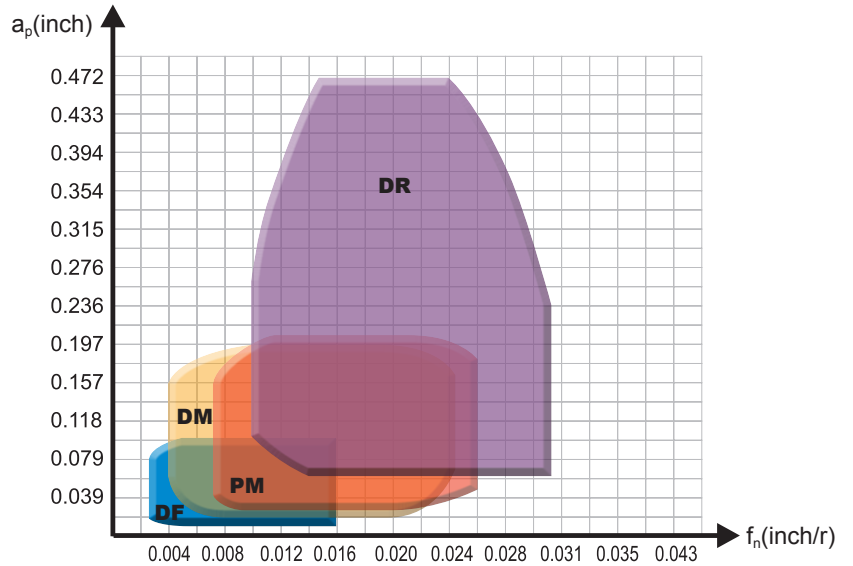
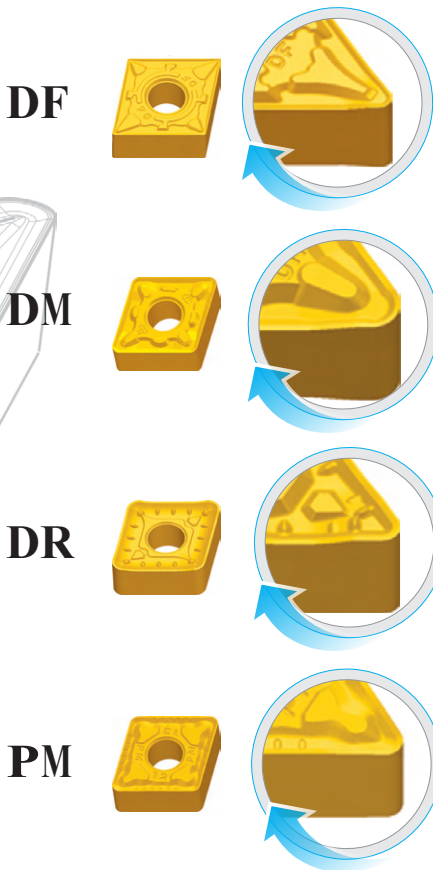
-NFINM Chipbreaker for General Finishing

- -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.

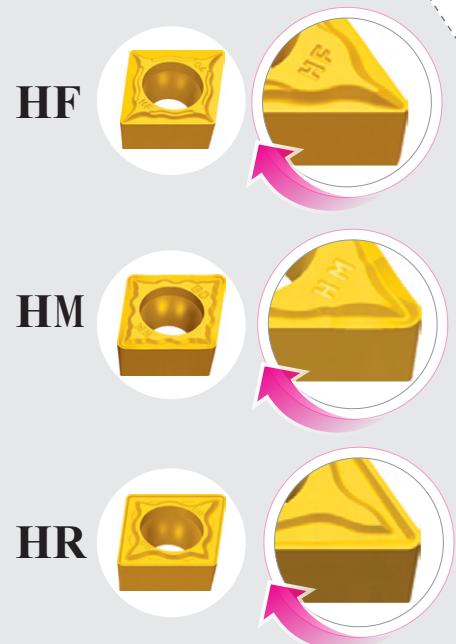
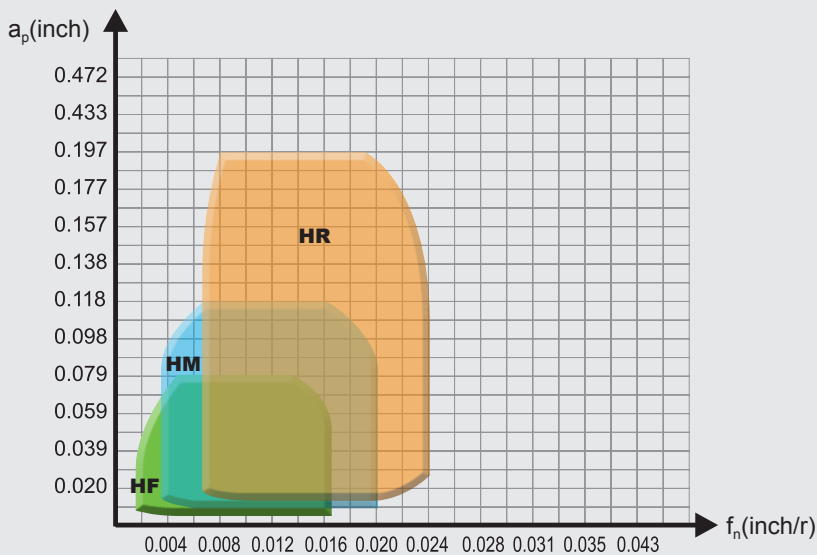


D series chip-breaker

can be used for machining steel from finishing to roughing.



H series chip-breaker



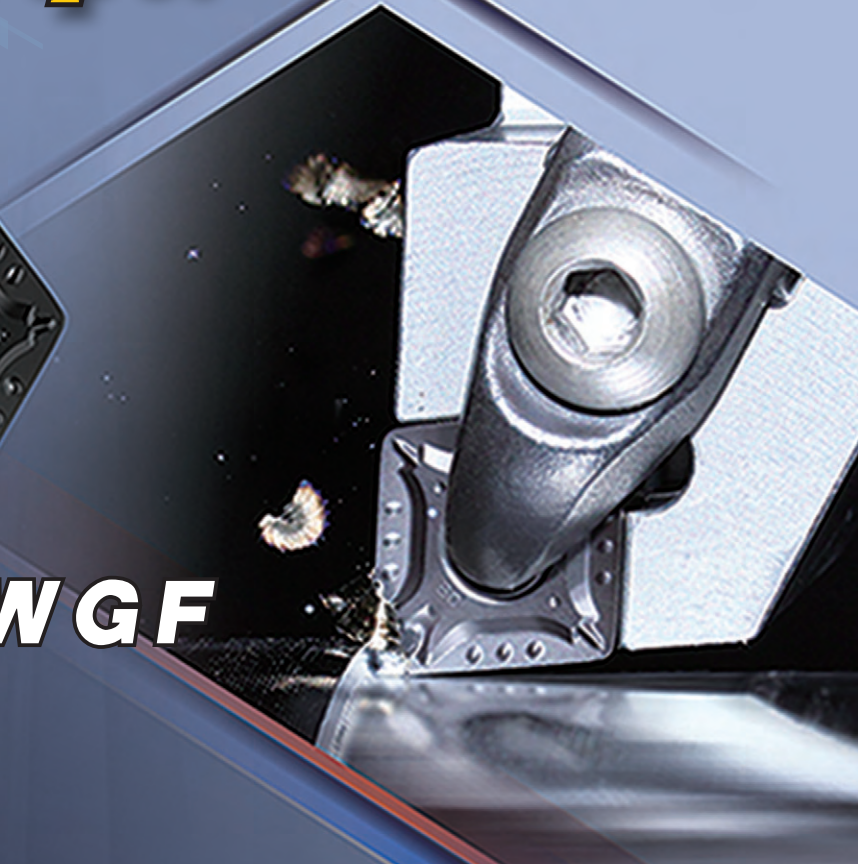
-WGM



*New product for
turning*

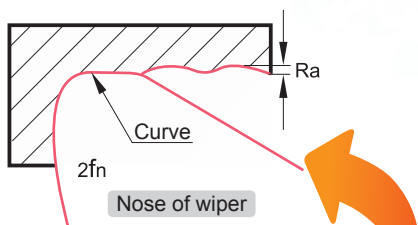
Wiper

-WGF



-WGF/WGM

chipbreaker series Turning inserts with wiper



High efficiency

Roughness remains the same when feed rate is doubled.



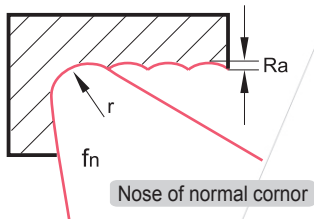
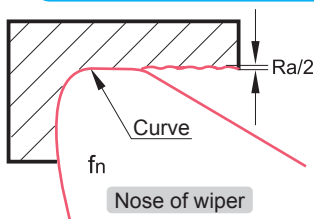
Wiper is assembled by three curves to form a circular arc edge. The nose of wiper provides less profile height on the surface that is formed by the cutting edge, resulting in a smooth turning surface.

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.

