



GENERAL TURNING TOOLS

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Product overview

Turning inserts

For finishing

					
CNMG-XF	DNMG-XF	SNMG-XF	TNMG-XF	VNMG-XF	WNMG-XF
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DNEG-NGF	VNEG-NGF	CNMG-DF	CNMG-SF	CNMG-EF	CNEG-NF	DNMG-DF	DNMG-SF
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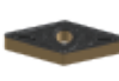


DNMG-EF	DNEG-NF	SNMG-DF	SNMG-EF	SNMG-SF	TNMG-DF	TNMG-SF	TNMG-EF
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VNMG-DF	VNMG-EF	VNEG-NF	VNMG-SF	WNMG-DF	WNMG-SF	WNMG-EF	WNEG-NF
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For semi-finishing

					
CNMG-XM	DNMG-XM	SNMG-XM	TNMG-XM	VNMG-XM	WNMG-XM
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CNMG-PM	CNMG-DM	CNMG-EM	CNMG-NM	DNMG-PM	DNMG-DM	DNMG-EM	DNMG-NM
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SNMG-PM	SNMG-DM	SNMG-EM	SNMG-NM	TNMG-PM	TNMG-DM	TNMG-EM	VNMG-PM
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VNMG-DM	VNMG-EM	VNMG-NM	WNMG-PM	WNMG-DM	WNMG-EM	WNMG-NM
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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****TNMG-ER****WNMG-DR**

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Conventional chipbreaker**CNMG****SNMG**

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Without chipbreaker (flat top)**CNMA****DNMA****SNMA****TNMA****WNMA**

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For fine finishing**CCGT-SF****DCGT-SF****VCGT-SF****CPGT-SF****DPGT-SF****TPGT-SF****TPGH-L**

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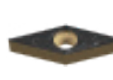
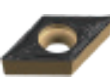
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For finishing**CCMT-XF****DCMT-XF****SCMT-XF****TCMT-XF****VBMT-XF****VCMT-XF**

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**VCGT-NGF****VBET-NGF****CCMT-HF****CCMT-EF****DCMT-HF****DCMT-EF****SCMT-HF****SCMT-EF**

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Negative inserts

Positive inserts

A

A

Positive inserts



TCMT-HF

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TCMT-EF

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VBMT-HF

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VBMT-EF

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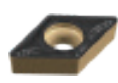
For semi-finishing



CCMT-XM

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DCMT-XM

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SCMT-XM

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TCMT-XM

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VBMT-XM

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VCMT-XM

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CCMT-HM

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CCMT-EM

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DCMT-HM

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DCMT-EM

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SCMT-HM

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SCMT-EM

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TCMT-HM

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TCMT-EM

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VBMT-HM

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VBMT-EM

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For roughing



VBMT-SNR

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CCMT-HR

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DCMT-HR

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SCMT-HR

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TCMT-HR

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VBMT-HR

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For Al machining



CCGX-LC

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CCGX-LH

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DCGX-LC

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DCGX-LH

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SCGX-LC

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SCGX-LH

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TCGX-LC

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TCGX-LH

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VCGX-LC

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VCGX-LH

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Negative inserts

PCBN inserts



CNGA

CNGA

DNGA

DNGA

SNGA

SNGA

TNGA

TNGA

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VNGA

VNGA

WNGA

WNGA

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Solid PCBN inserts



CNGN

DNGN

SNGN

TNGN

VNGN

WNGN

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PCD inserts



CNMX

DNMX

TNMX

VNMX

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PCBN inserts



CCGW

DCGW

TCGW

VBGW

VCGW

TPGW

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A100

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PCD inserts



CCGW

CCMX

DCGW

DCMX

TCGW

TCMX

VBGW

VBMX

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VCGW

VCMX

TPMX

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Positive inserts

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

General pitch thread

Whitworth thread



External thread

Internal thread

External thread

Internal thread

External thread

Internal thread

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C177

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C179

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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

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C180

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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)



External thread

Internal thread

External thread

Internal thread

External thread

Internal thread

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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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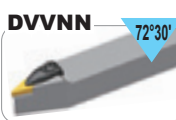
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Turning toolholders

External turning toolholders

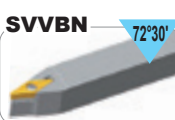
D-Multi clamp

						
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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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Parting and grooving tools

						
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Threading tools

			
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Table of recommended grades for turning inserts

ISO	Code	General turning								Threading	Parting and grooving		
		Coated grade		Cermet	Coated cermet	Ceramic	Cemented carbide	PCBN	PCD	Coating	Coating		Cemented carbide
		CVD	PVD							PVD	CVD	PVD	
P Steel	01												
	10	YBC152 YBC103	YBG102	YNG151	YNG151C		CA1000			YBG202 YBG203		YBG205	
	20	YBC252 YBC203	YBG202									YBG302	
	30		YBC352			CN2000							
	40												
M Stainless steel	01												
	10	YBM153 YBM251	YBG202 YBM215 YBG205	YNG151	YNG151C					YBG202 YBG203		YBG205 YBG302	
	20	YBM253											
	30												
	40												
K Cast iron	01												
	10	YBD052 YBD102 YBD152		YNG151	YNG151C	CN1000	YD201	YCB011 YZB221		YBG202 YBG203		YBG205 YBG302	YD201
	20					CN2000							
	30												
N non-ferrite materials	01												
	10						YD101		YCD011	YBG202 YBG203			YD101
	20												
	30												
S Heat-resistant steel, Titanium alloy	01												
	10		YBS103 YBG102 YBG105 YBG212			CN3000	YD101			YBG202 YBG203		YBS103 YBG102 YBG105 YBG302 YBG212	YD101
	20												
	30												
H Hardened material	01												
	10					CA1000		YCB012		YBG202 YBG203			
	20												
	30												

Introduction of chipbreakers

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 ISO P materials Double-sided chipbreaker with M-class tolerance has outstanding performance on machining P kind soft steel and medium-carbon steel to ensure high surface quality.
	XF	M			Recommended chipbreaker for finishing ISO P materials Curved edge inclination ensures the strength of the cutting edge and reduces cutting resistance, the special chipbreaker design ensures improved chip control performance within the finishing range.
	DF	M			Recommended chipbreaker for finishing ISO P materials Double-sided chipbreaker with M-class tolerance for finish machining carbon and alloy steels.
	EF	M			Recommended chipbreaker for finishing ISO M materials Double-sided 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 ISO S materials Double-sided 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 ISO S materials E-class double-sided chipbreaker with excellent sharp edge. High positioning accuracy, light cutting force. -NGF is recommended chipbreaker for S series material general finishing.
For semi-finishing	XM	M			Recommended chipbreaker for semi-finishing ISO P materials With the specially designed cutting-edge structure to ensure its sharpness and strength, the newly designed chipbreaker geometry, and innovative coating grades, the cutting edge is superior in its strength and wear resistance.
	DM	M			Recommended chipbreaker for semi-finishing ISO P materials Double-sided chipbreaker with M-class tolerance reduces cutting force and workpiece adhesion, with a broad chip-breaking range for machining alloy steel.

Introduction of chipbreakers

Negative inserts with a hole

Application	Chipbreaker	Precision	Recommended cutting parameters	Chipbreaker profile	Feature/Shape of insert
For semi-finishing	PM	M			Recommended chipbreaker for semi-finishing ISO P materials Double-sided 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.
	NM	M			Recommended chipbreaker for semi-finishing ISO S materials Double-sided 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.
	EM	M			Recommended chipbreaker for semi-finishing ISO M materials Double-sided 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.
	Conventional Chipbreaker	M			For machining ISO P, ISO M, ISO K materials from semifinishing to roughing Double-sided chipbreaker with M-class tolerance has good cutting edge toughness with wide application area. Unfavorable chip control compared to dedicated chipbreakers.
	DR Double-sided	M			Recommended chipbreaker for light-load roughing of ISO P and ISO K materials Double-sided chipbreaker with M-class tolerance for light roughing, higher metal removal rate, and greater cutting edge security.
For roughing	ER Single/Double side	M			Recommended chipbreaker for roughing ISO M 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.

Introduction of chipbreakers

Negative inserts with a hole

Application	Chipbreaker	Precision	Recommended cutting parameters	Chipbreaker profile	Feature/Shape of insert
For roughing	DR Single-side	M			Recommended chipbreaker for roughing ISO P materials Single-sided 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.
	SNR	M			Recommended chipbreaker for ISO 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.
Heavy-load machining	HDR	M			Recommended chipbreaker for heavy-load machining ISO P materials Single-sided 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.
Cast iron machining	Without chipbreaker (flat top)	M			For machining cast iron Double-sided with M-class tolerance has high cutting edge strength to effectively machine through workpiece imperfections, such as sand pockets in cast iron.
Superhard insert	Without chipbreaker (flat top)	G			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.

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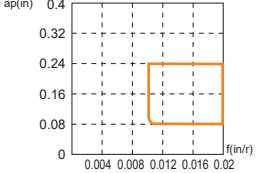
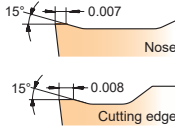
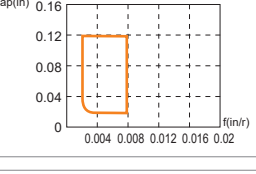
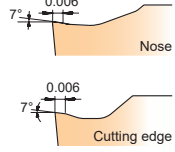
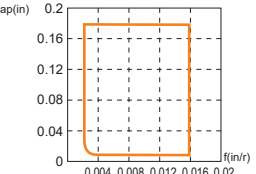
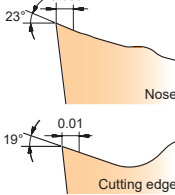
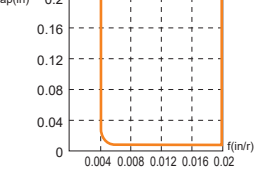
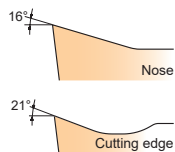
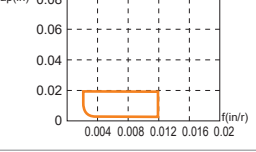
Introduction of chipbreakers

Positive inserts with a hole

Application	Chipbreaker	Precision	Recommended cutting parameters	Chipbreaker profile	Feature/Shape of insert
For superfinishing	SF	G			First choice for superfinishing G-class tolerance is recommended for precision finishing.
	XF	M			Recommended chipbreaker for finishing ISO P materials Curved edge inclination ensures the strength of the cutting edge and reduces cutting resistance, the special chipbreaker design ensures improved chip control performance within the finishing range.
	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 ISO M 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 ISO S material general finishing E, G grade accuracy, for inner hole finishing of S materials.
	XM	M			Recommended chipbreaker for semi-finishing ISO P materials With the specially designed cutting-edge structure to ensure its sharpness and strength, the newly designed chipbreaker geometry, and innovative coating grades, the cutting edge is superior in its strength and wear resistance.
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 ISO M materials M-class tolerance; higher toughness on cutting edge than EF chipbreaker for higher feed and depth of cut.

Introduction of chipbreakers

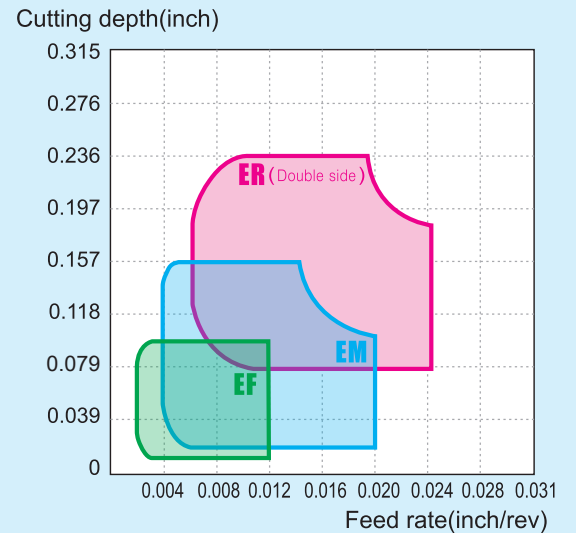
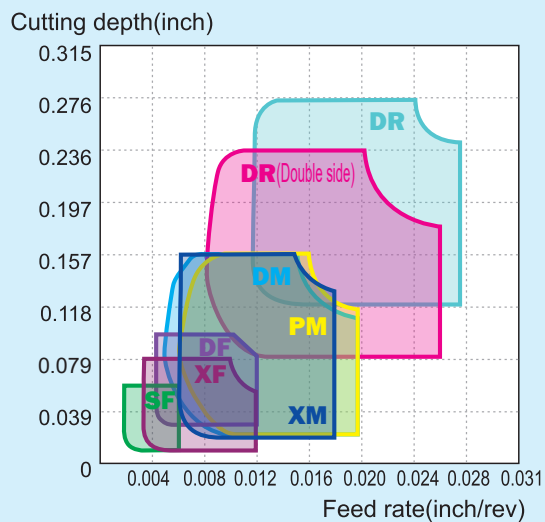
Positive inserts with a hole

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 ISO S material high-efficiency roughing M-level accuracy, for inner hole roughing of S materials. 
For Al 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. 

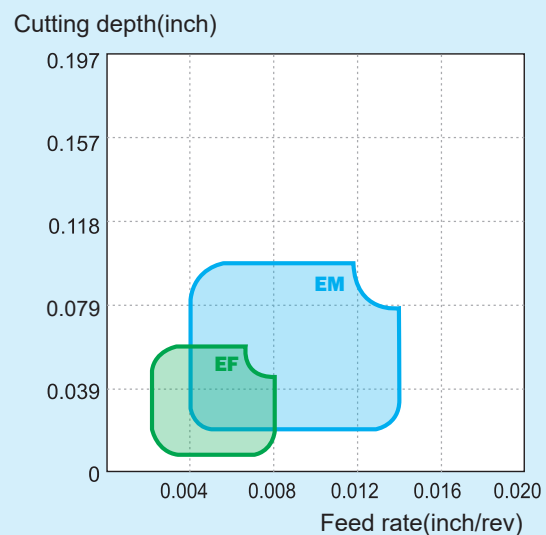
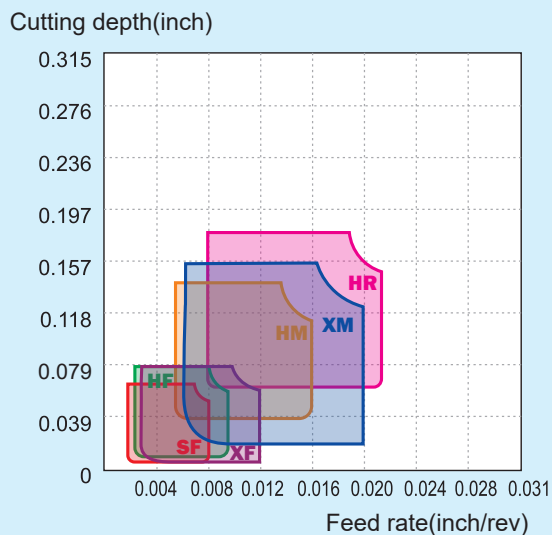
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Main chip breaking range reference for general turning inserts

Negative inserts



Positive inserts

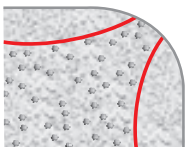


Second generation of YBC

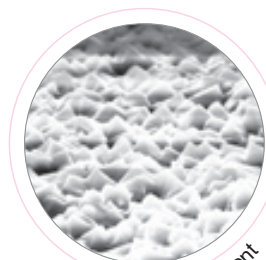
BLACK DIAMOND INSERTS

Achieving both higher cutting speed and longer tool life

- Perfect unification of toughness and plastic-deformation resistance. 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.

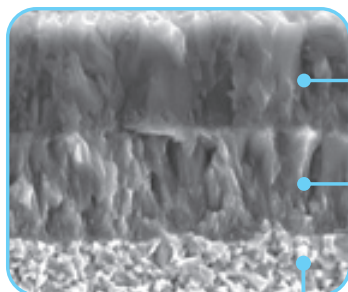


Before surface treatment



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



8min

16min



8min

16min



Coated Cemented Carbide CVD

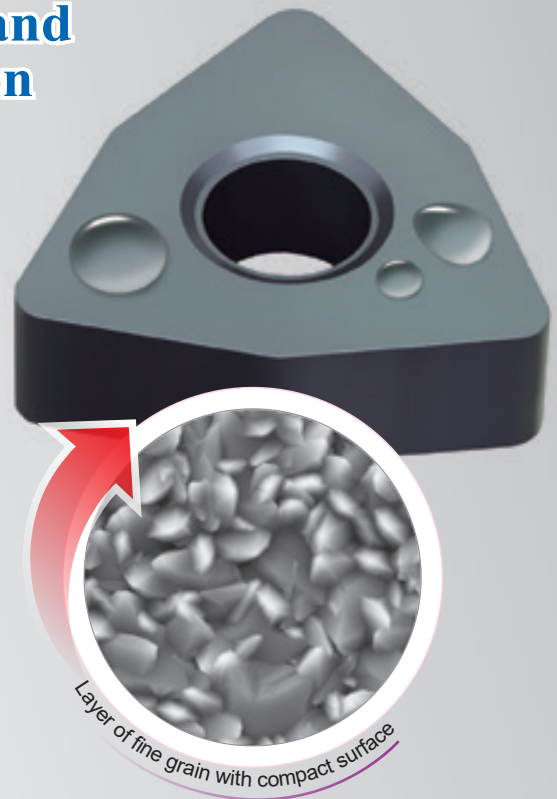
BLACK DIAMOND INSERTS **YBD**

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.

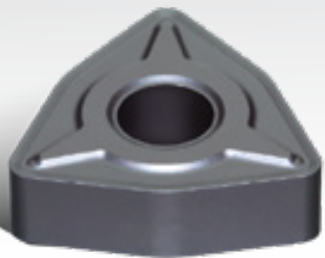
YBD152

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.

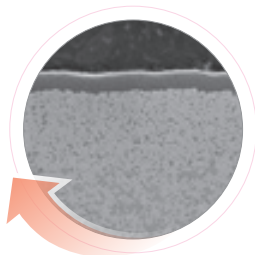
YBM153



Best choice for roughing of stainless steel with high-speed under good working condition

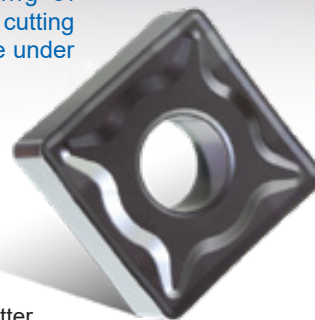
Coating

- ✓ CVD coating with advanced ultra-fine grain coating technology, greatly improves wear resistance of inserts.
- ✓ Thanks to special treatment on transition layer, multi-layer coating are combined firmly.
- ✓ The exceptionally smooth coating surface and good low friction ability can reduce the occurrence of built-up edges.



YBM253

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



Coating

- ✓ 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

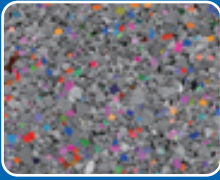
YNG151

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.

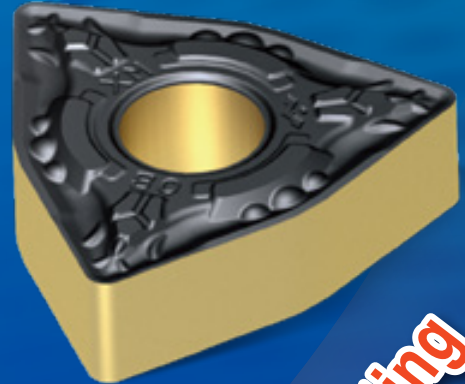
New cemented carbide matrix



The composition and microstructure optimized by thermodynamic and kinetic theoretical models have significantly improved the product's resistance against plastic deformation and wear under high temperature.

Grain adjustment technology and the cubic phase grains being finer and more evenly distributed have optimized the insert's performance under high temperature. The coupling change of the bonding property and solid solution gradient have enhanced the strength of the cutting edge.

YBC103



Fine-grained columnar structure Al_2O_3 ultra-thick coating technology



Outstanding high temperature performance and wear resistance, two-color marking layer and ultra-smooth Al_2O_3 coating rake face account for the improved smoothness and uniformity of the cutting edge and the enhanced surface processing quality.

Hydrogen peroxide gradient transition layer technology



The hydrogen peroxide gradient transition layer adopts PCN technology, which produces fine and dense coating grains, and therefore further improves its high temperature performance and oxidation resistance of the insert.

A new generation of high performance CVD coating

With improved cutting edge's strength, wear resistance and high temperature oxidation resistance, YBC series of coating grades work efficiently in steel processing.

-XF Chip-breaker for finishing

- Curved edge inclination ensures the strength of the cutting edge and reduces cutting resistance.
- The full-curved structure improves its versatility.
- Moreover, the special chip-breaker design ensures improved chip control performance within the finishing range.

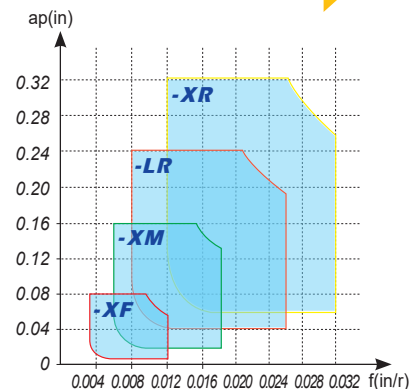


-XM Chip-breaker for semi-finishing

- With the specially designed cutting-edge structure to ensure its sharpness and strength, the newly designed chip-breaker geometry, and innovative coating grades, the cutting edge is superior in its strength and wear resistance.
- Its performance is both stable and efficient.



Application range





YBC203

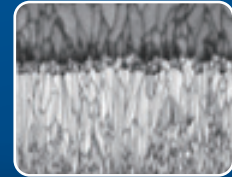
New cemented carbide matrix

The new matrix adopts a new organizational structure and sintering technology, which refines the alloy structure, strengthens the bonding phase, and makes the structure more uniform and the control more precise. As a result, this technology significantly improves its machining efficiency and its resistance against plastic deformation and oxidation under high temperature.

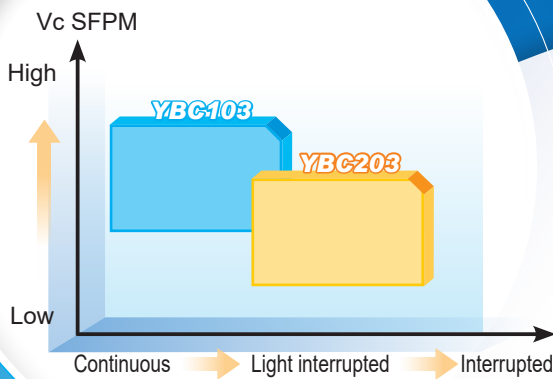


A new generation of ultra-fine grain coating

Ultra-fine grain coating provides outstanding high temperature performance and wear resistance. The two-color marking layer and ultra-smooth Al_2O_3 coating rake face improve the smoothness and uniformity of the cutting edge and enhance the quality of surface processing.



Application range



Applications

Workpiece: Bearing
 Workpiece material: GCr15
 Hardness of material: HRC30
 Insert: DNMG441-XF/YBC103
 Cutting parameters: $V_c=870$ SFPM,
 $a_p=0.02\sim0.03$ in,
 $f=0.01$ in/r
 Coolant: Without



New Chip-breakers for Turning Steel

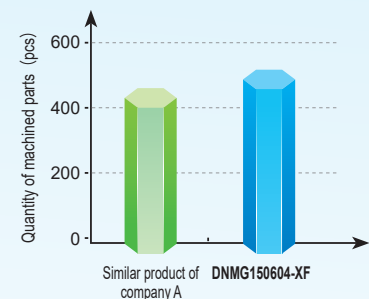
-XR Chip-breaker for roughing

- M-class chip-breaker with sharp cutting edge and inclination design has low cutting resistance and excellent chips control, which makes it ideal for light-load roughing.



-LR Chip-breaker for roughing

- M-class double-sided chip-breaker adopts variable edge design to effectively reduce cutting force and improve chip control, which makes it ideal for light-load roughing.



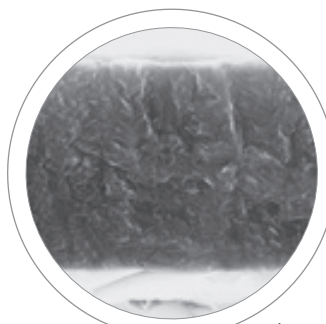
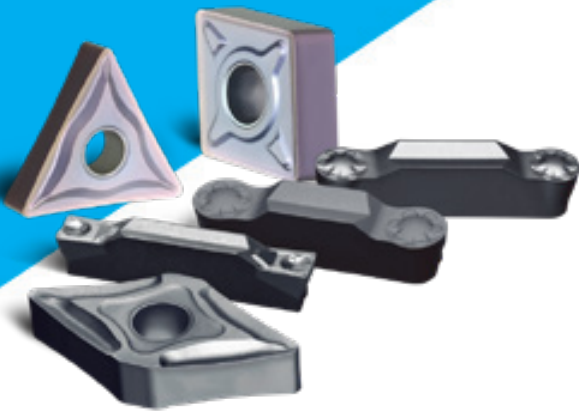
Conclusion: The insert proved to be superior to the similar products by A company in both efficiency and quality of the finished surface.

At the Cutting Edge of Grade and Coating Technology

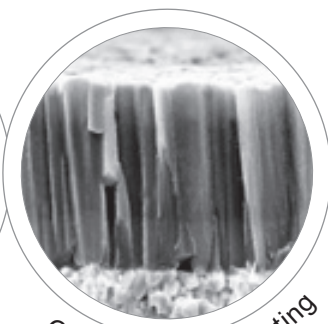
For parting, grooving and the machining of difficult to machine materials.

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.

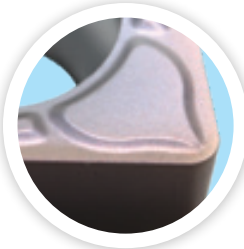
-EF -EM -ER

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



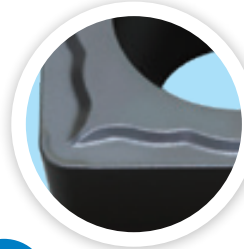
-EF

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.



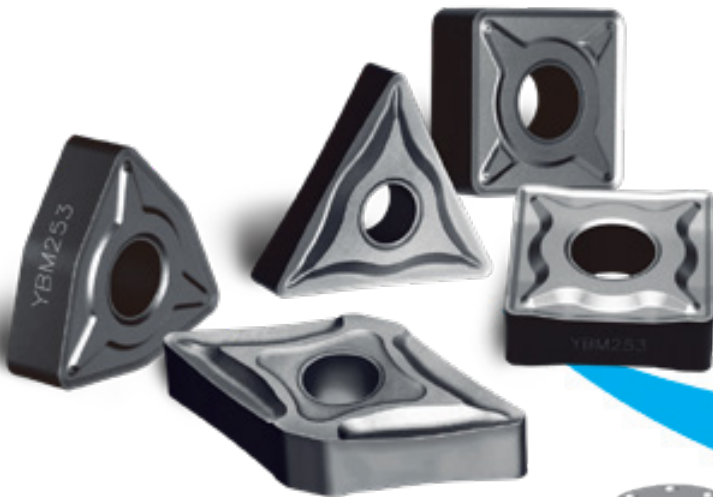
-EM

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.

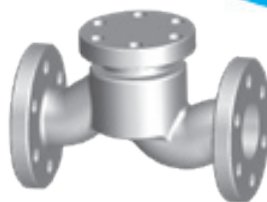
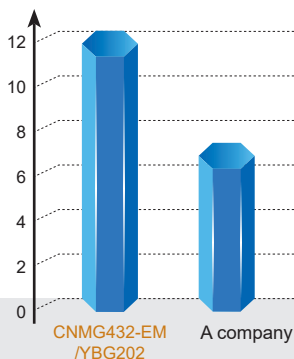


-ER

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



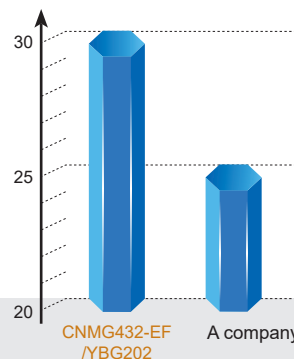
Number of machined parts / Cutting edge



Machining external of valve

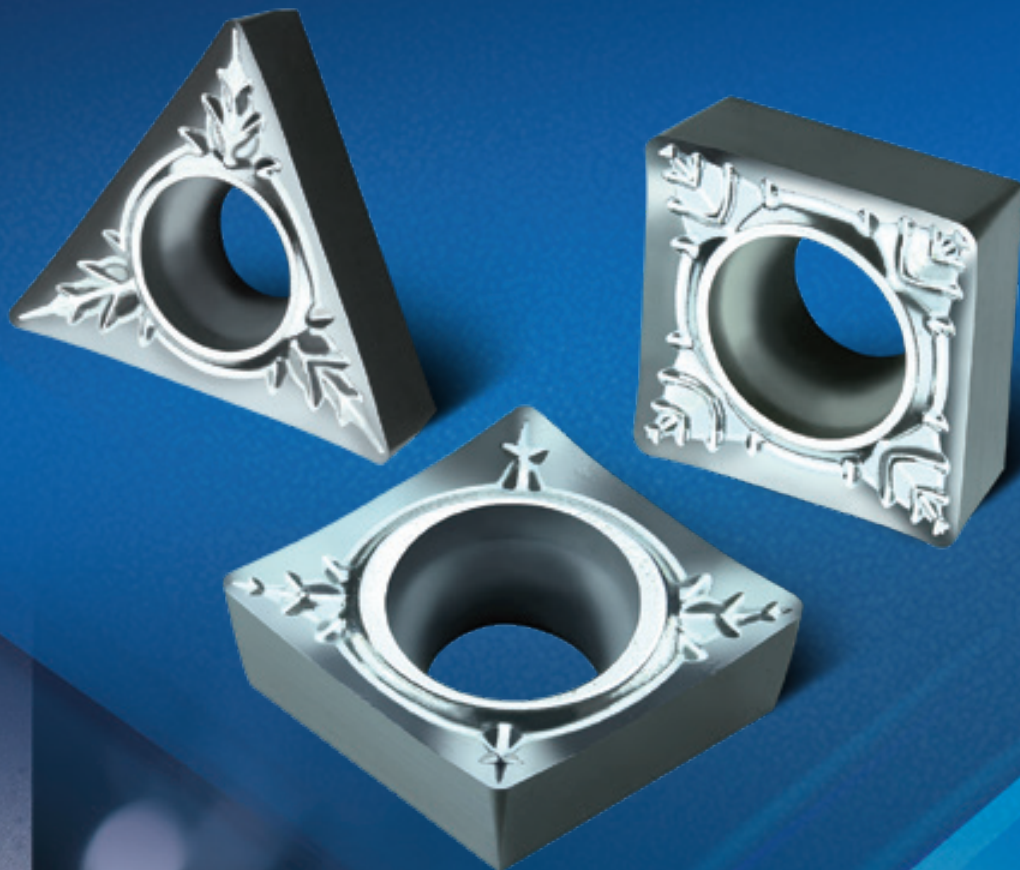
Machining end surface of valve (intermittent machining)
Workpiece diameter: 5.3in
Rotating speed: 350 rpm
Feed rate: 0.01in/r
Cutting depth: 0.059in

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

-LC *New-generation chip-breaker for Al machining*

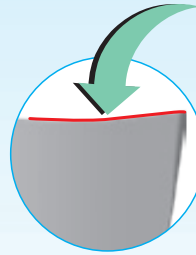


-LC

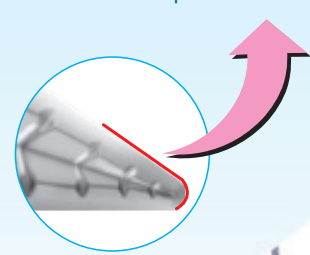
New-generation chip-breaker for aluminum

- 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.

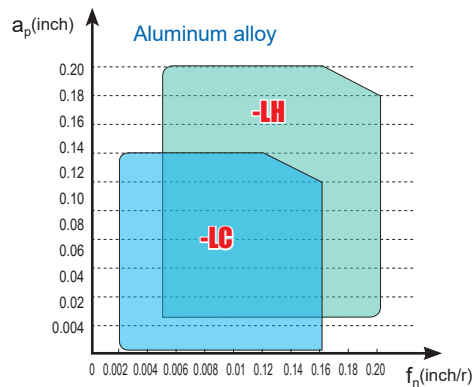
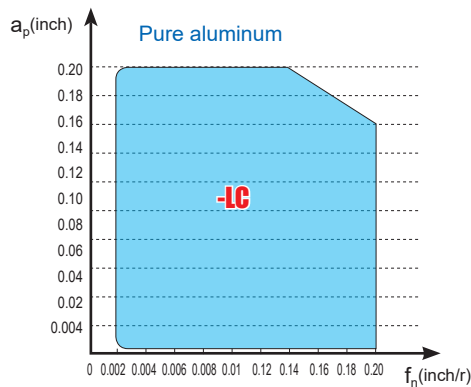


Cutting edge segues from nose to main edge without interruption.

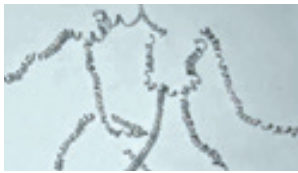
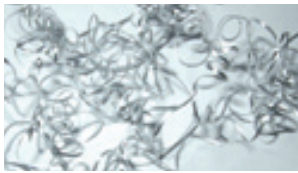
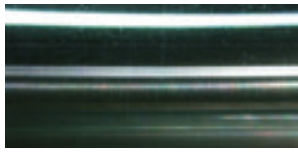


-LC and -LH chipbreaker characteristics and machining range

-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

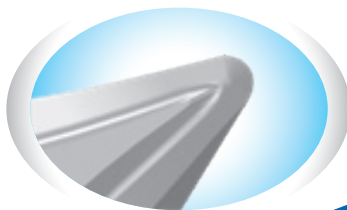
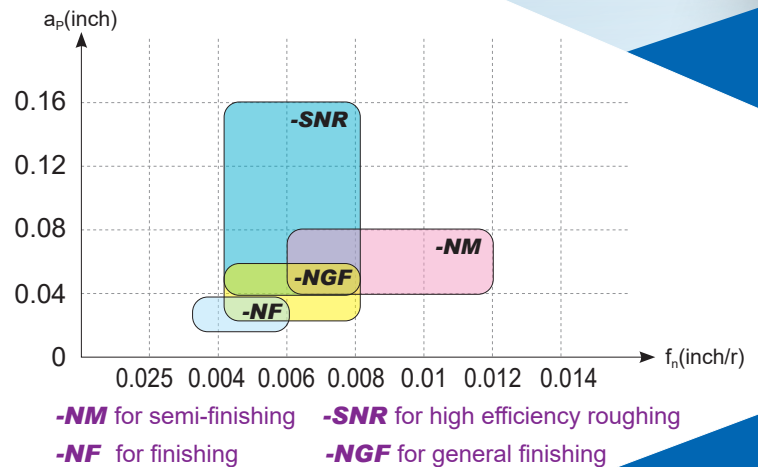
Cutting parameters	V=1148SFPM Ap=0.008inch F=0.008inch/r	
Chips		
Surface quality		
	-LC chipbreaker	Competitor's tool
	-LH chipbreaker is more suitable for machining aluminum alloy with larger cutting depth and higher feed rate. -LC chipbreaker is more suitable for machining aluminum alloy with smaller 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.



-SNR

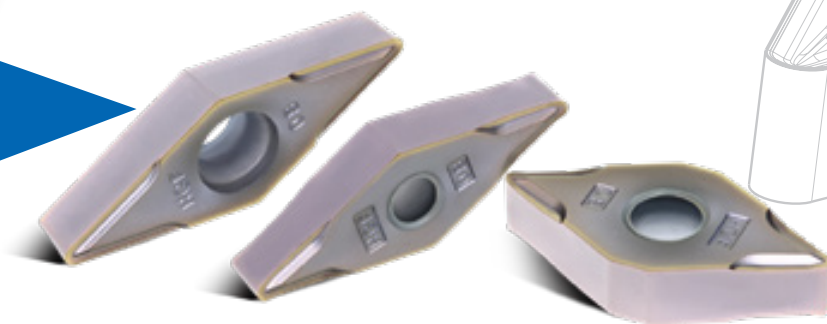
Chip-breaker for roughing with large depth of cut

- 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.



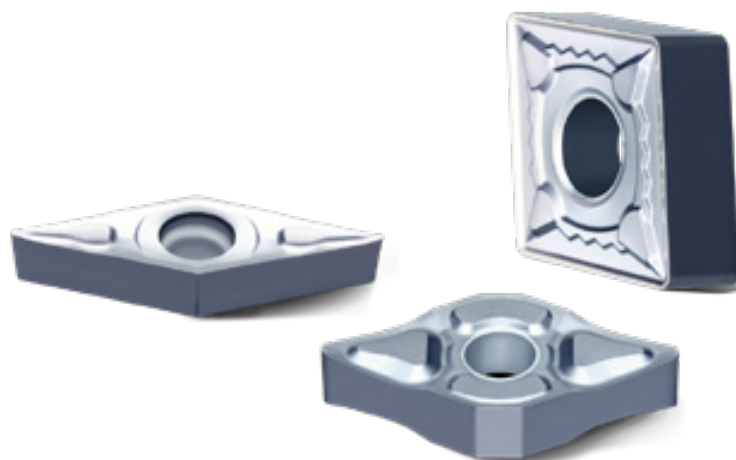
-NGF Chip-breaker for General Finishing

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



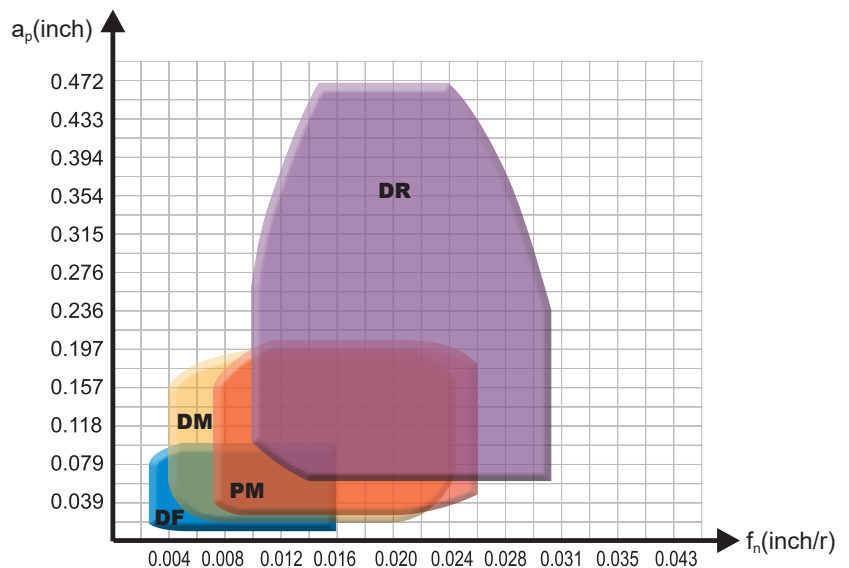
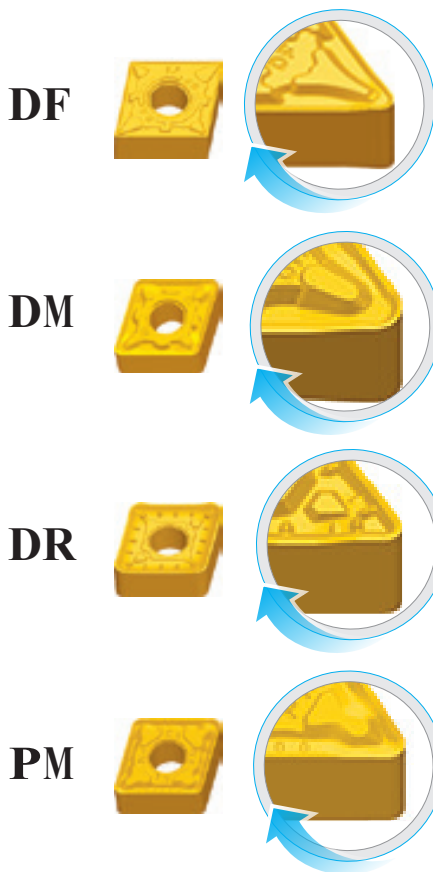
-NFINM Chip-breaker for General Finishing

- -NF chip-breaker 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.

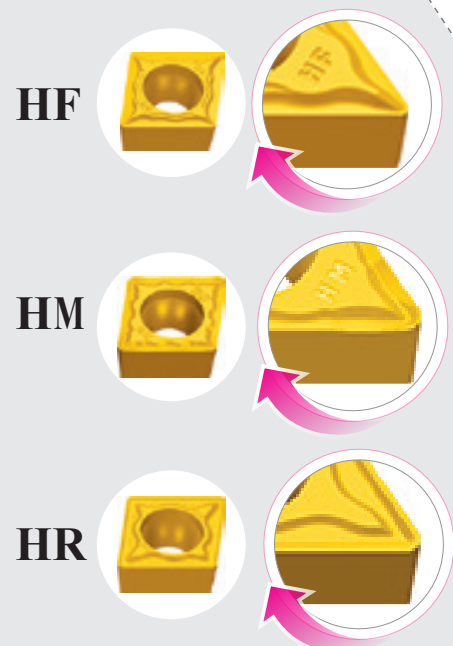
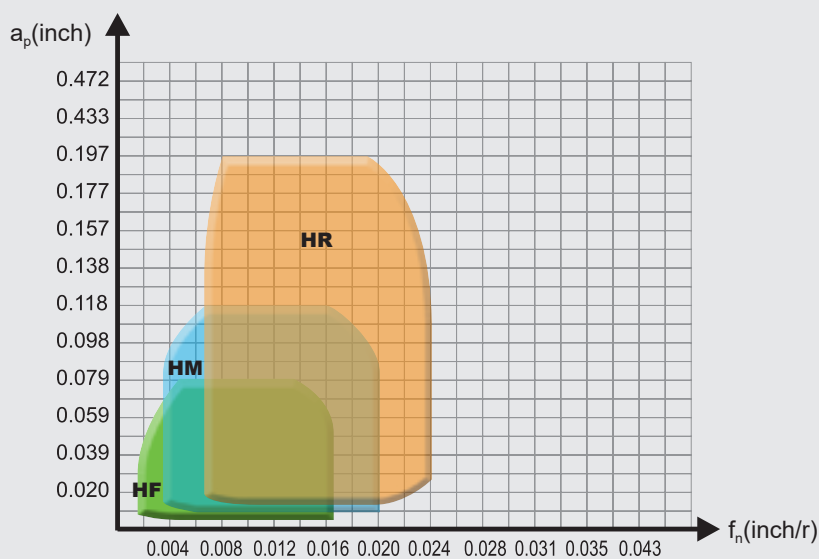


D series chip-breaker

can be used for machining steel from finishing to roughing



H series chip-breaker





-SF

chip-breaker 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.

