

5000 Series Grades for Cast Iron Turning

Series
Expansion

Reduced cycle times!
New coating for speeds up to 2,000 SFM.

MC5005
MC5015 **+** **LK**
MK
RK

ISO insert series for Cast Iron Turning

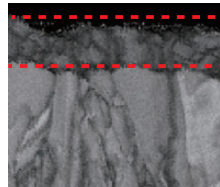
MC5005/MC5015

Extra thick Al₂O₃ coating layer

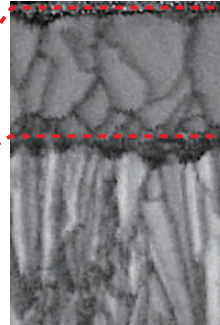
Achieved by combining the latest coating technologies.

Thickness comparisons of Al₂O₃

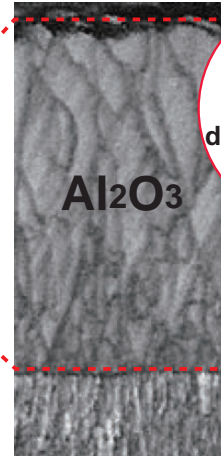
More than double thickness conventional Al₂O₃ coating layers.



Conventional A



Conventional B



MC5005

Al₂O₃ coating-
more than
double thickness

*Based on our research.

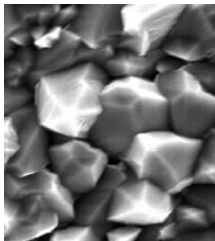
Patented technology

Nano-Texture Coating Technology

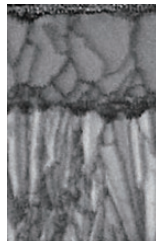
The optimized crystal growth, Nano-Texture coating technology gives outstanding wear and chipping resistance.

Conventional technology

Surface texture
after coating



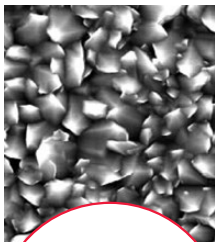
Section of coating
structure



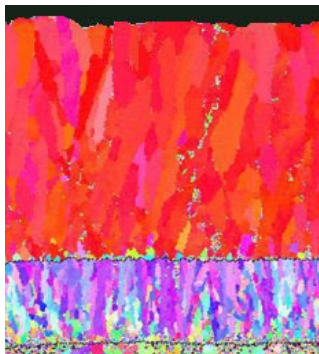
Crystallographic
structure



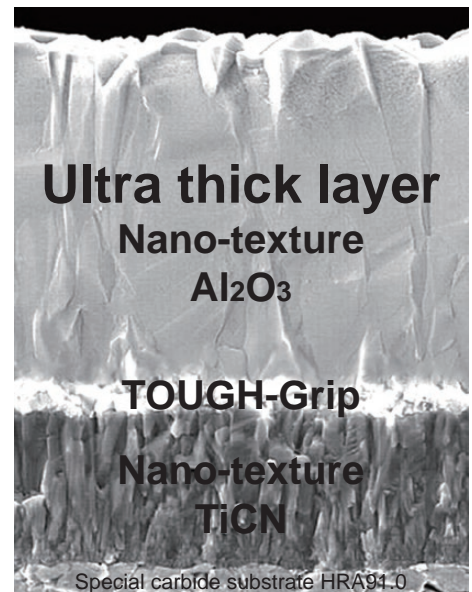
Nano-texture



Optimized
crystal growth
condition



Similar colors demonstrate uniform
direction of growth for crystals.

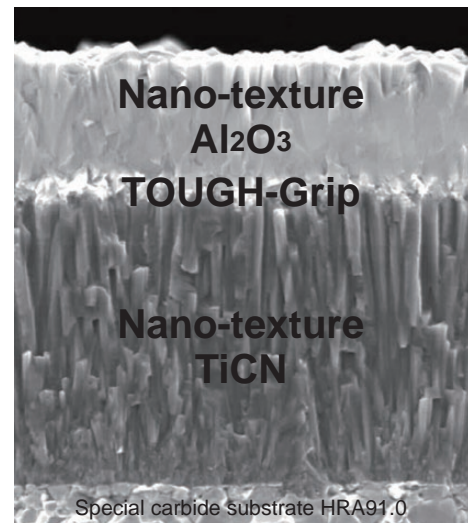


Ultra thick layer
Nano-texture
Al₂O₃

TOUGH-Grip
Nano-texture
TiCN

Special carbide substrate HRA91.0

MC5005



Nano-texture
Al₂O₃
TOUGH-Grip

Nano-texture
TiCN

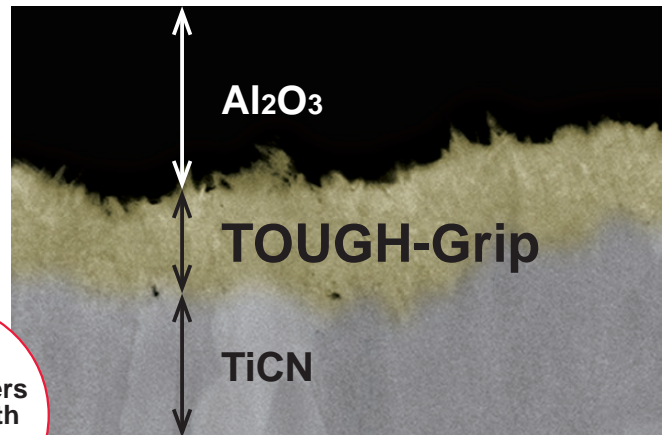
Special carbide substrate HRA91.0

MC5015

Patented technology

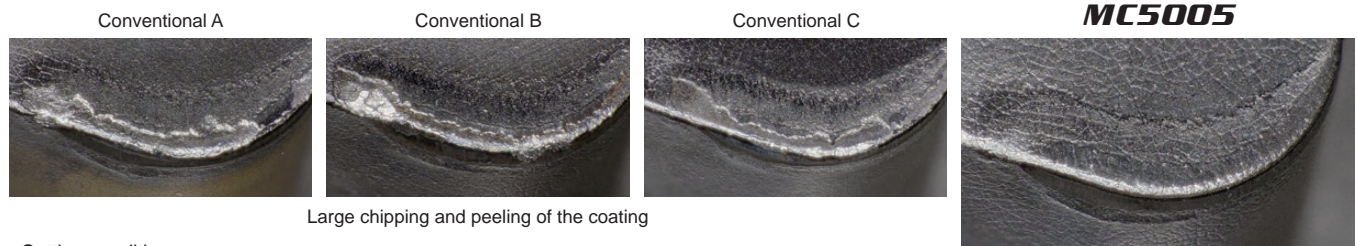
TOUGH-Grip Technology

The interface between layers is controlled at the nano level, allowing TOUGH-Grip layer extremely high levels of adhesion to prevent delamination.



TOUGH-Grip performance comparison

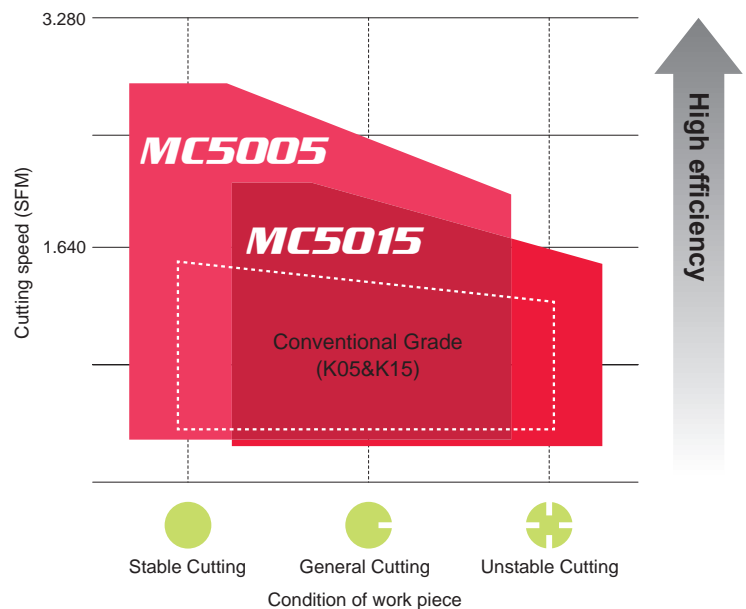
Conventional thick layers show adverse affects of peeling.



<Cutting conditions>
Work material : AISI 100-70-03
Inserts : CNMA433
Cutting speed : 985 SFM
Feed rate : .012 IPR
Depth of cut : .079 inch
Cutting mode : Wet cutting
Cutting time : 4min

Application range

Speeds normally associated with ceramic grades are now achievable. Reduction of costs when machining cast iron parts by using high efficiency methods is now possible because of improved tool life and cutting edge reliability.



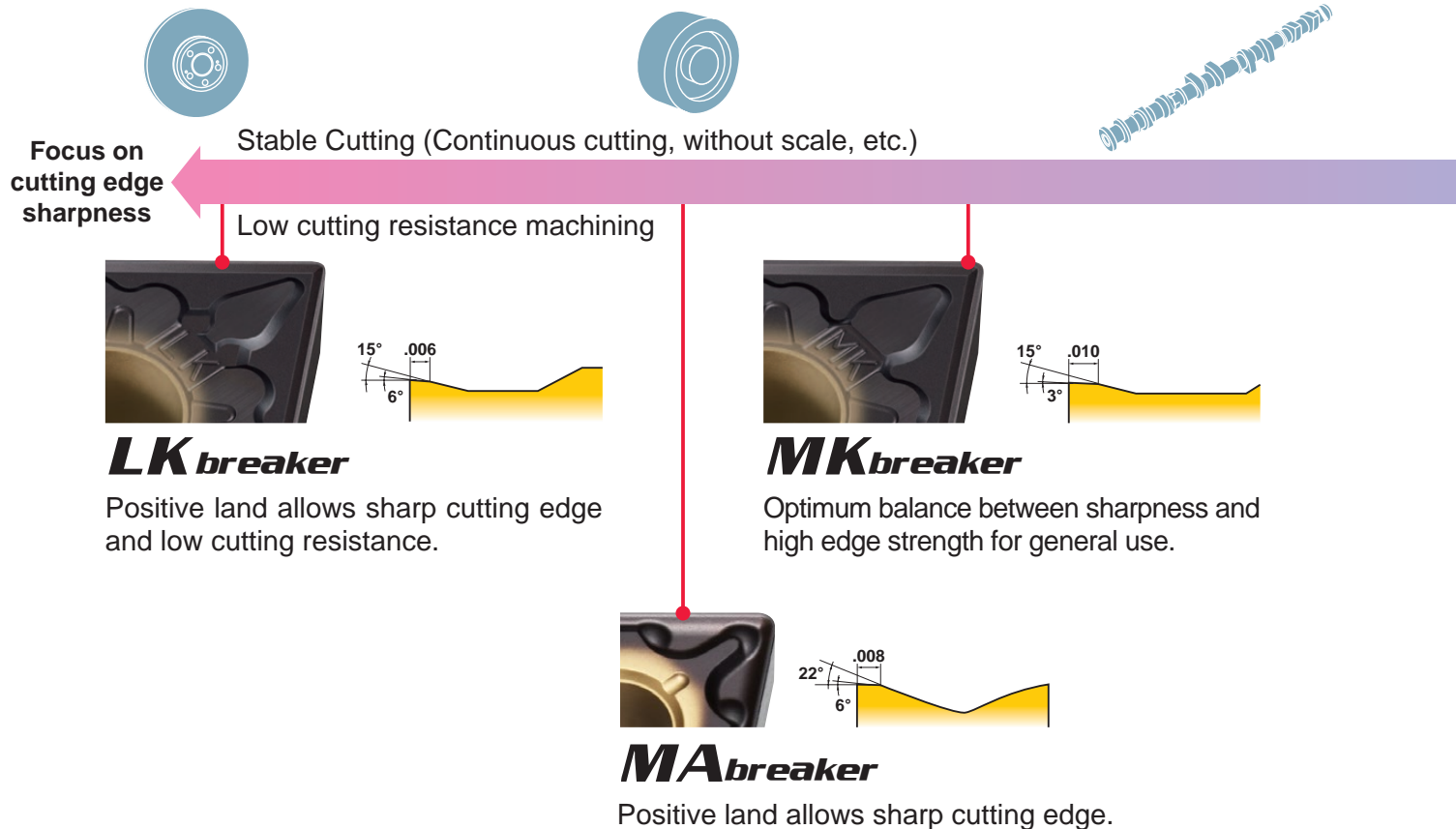
New chipbreaker system for cast iron turning

The entire range of new chipbreakers has been designed by taking advantage of properties for new grades. Each chipbreaker has the optimum suitability for each respective application.

Negative Inserts

LK/MK/RK/Flat Top, GK/MAbreaker

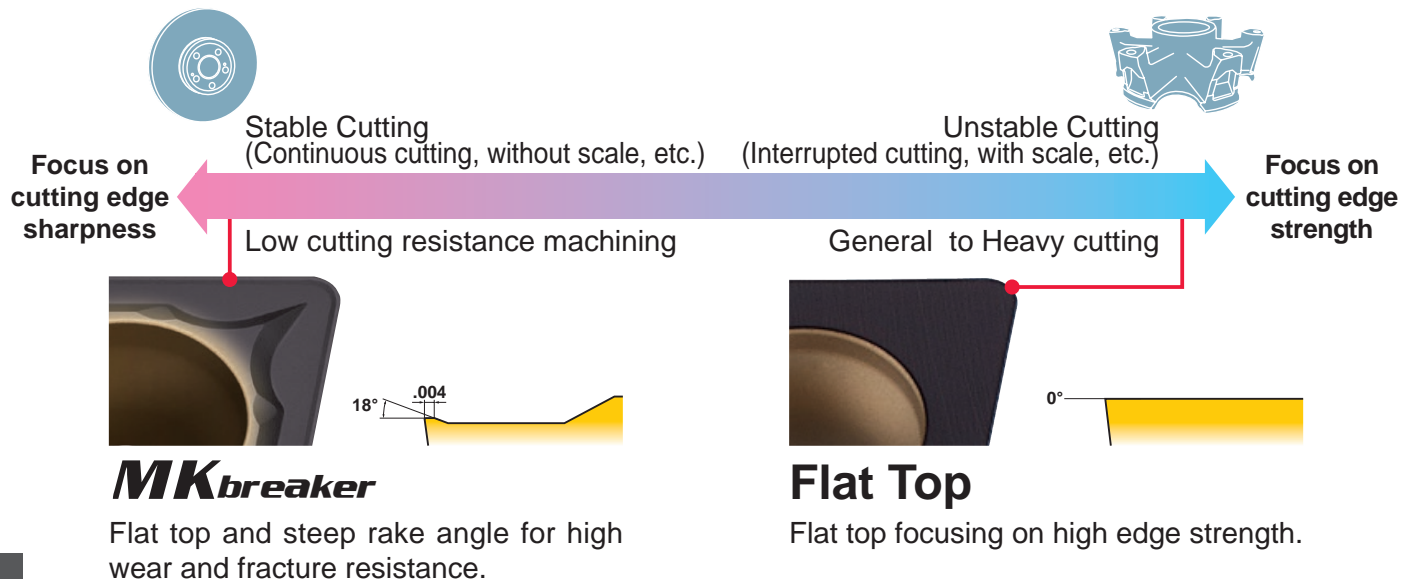
Chipbreaker is selected according to the machining conditions.



Positive Inserts

MKbreaker/Flat Top

Chipbreaker is selected according to the machining conditions.

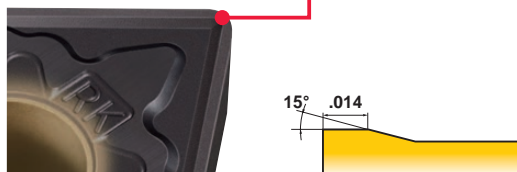




Unstable Cutting (Interrupted cutting, with scale, etc.)

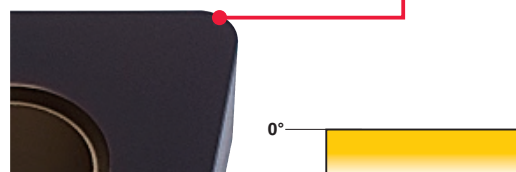
Focus on cutting edge strength

General to Heavy cutting



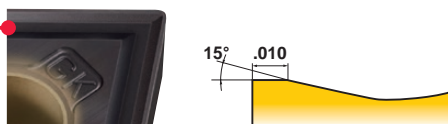
RKbreaker

Extra wide land provides a stable cutting edge for interrupted machining and removal of scale.



Flat Top

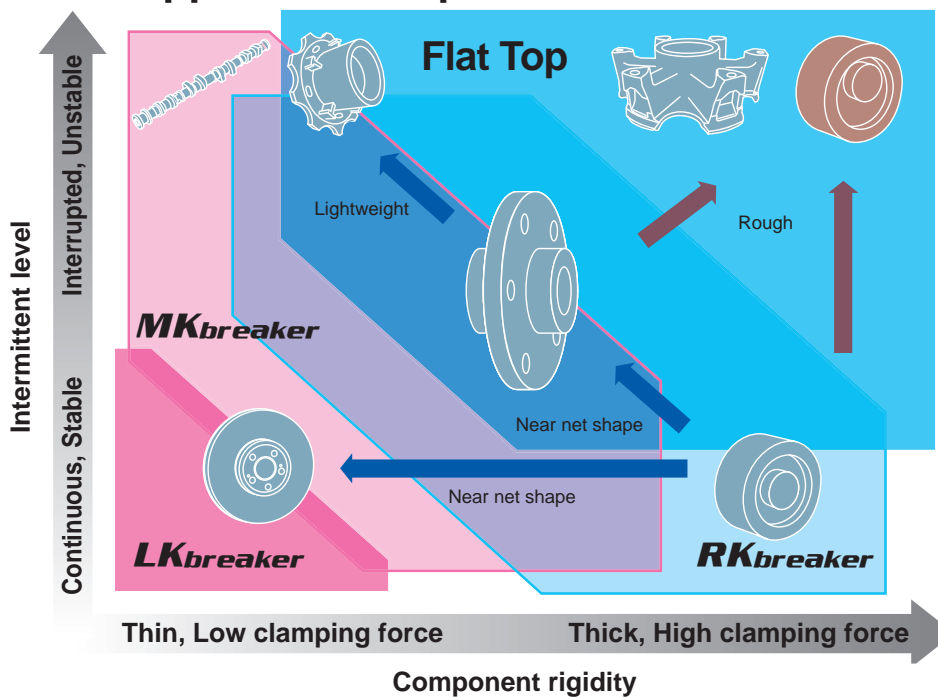
Flat top focusing on high edge strength.



GKbreaker

Versatile standard chipbreaker. Flat land maintains a stable cutting edge.

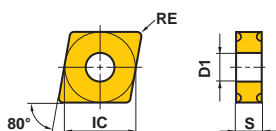
Application map for cast iron



MC5005/MC5015

Negative Inserts (With hole)

M Class

CNMG
CNMA

Light Cutting	Light Cutting	Medium Cutting	Medium Cutting	Medium Cutting
LK	SW	MA	MK	MW
				
	(Wiper)			(Wiper)
Rough Cutting	Rough Cutting	For Cast Iron		
GK	RK	Flat Top		
				

Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
CNMG431LK	L	●	●	.500	.187	.016	.203
CNMG432LK	L	●	●	.500	.187	.031	.203
CNMG433LK	L	●	●	.500	.187	.047	.203
CNMG431SW	L	●	●	.500	.187	.016	.203
CNMG432SW	L	●	●	.500	.187	.031	.203
CNMG431MA	M	●	●	.500	.187	.016	.203
CNMG432MA	M	●	●	.500	.187	.031	.203
CNMG433MA	M	●	●	.500	.187	.047	.203
CNMG431MK	M	●	●	.500	.187	.016	.203
CNMG432MK	M	●	●	.500	.187	.031	.203
CNMG433MK	M	●	●	.500	.187	.047	.203
CNMG434MK	M	●	●	.500	.187	.063	.203
NEW CNMG542MK	M	★	●	.625	.250	.031	.250
CNMG543MK	M	●	●	.625	.250	.047	.250
CNMG544MK	M	●	●	.625	.250	.063	.250
CNMG643MK	M	●	●	.750	.250	.047	.312
CNMG644MK	M	●	●	.750	.250	.063	.312
CNMG432MW	M	●	●	.500	.187	.031	.203
CNMG433MW	M	●	●	.500	.187	.047	.203

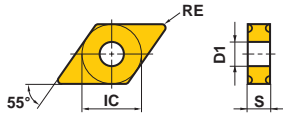
Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
CNMG431GK	M	●	●	.500	.187	.016	.203
CNMG432GK	M	●	●	.500	.187	.031	.203
CNMG433GK	M	●	●	.500	.187	.047	.203
CNMG432RK	R	●	●	.500	.187	.031	.203
CNMG433RK	R	●	●	.500	.187	.047	.203
CNMG434RK	R	●	●	.500	.187	.063	.203
NEW CNMG542RK	R	★	●	.625	.250	.031	.250
CNMG543RK	R	●	●	.625	.250	.047	.250
CNMG544RK	R	●	●	.625	.250	.063	.250
CNMG643RK	R	●	●	.750	.250	.047	.312
CNMG644RK	R	●	●	.750	.250	.063	.312
CNMA431		●	●	.500	.187	.016	.203
CNMA432		●	●	.500	.187	.031	.203
CNMA433		●	●	.500	.187	.047	.203
CNMA434		●	●	.500	.187	.063	.203
CNMA543		●	●	.625	.250	.047	.250
CNMA544		●	●	.625	.250	.063	.250
CNMA643		●	●	.750	.250	.047	.312
CNMA644		●	●	.750	.250	.063	.312
NEW CNMA646		★	★	.750	.250	.094	.312

● : Inventory maintained. ★ : Inventory maintained in Japan.

Negative Inserts (With hole)

M Class

DNMG
DNMX
DNMA



Light Cutting	Medium Cutting	Medium Cutting	Medium Cutting
LK	MA	MK	MW
			
	(Wiper)		(Wiper)
Rough Cutting	Rough Cutting	For Cast Iron	
GK	RK	Flat Top	
			

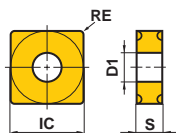
Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
NEW DNMG332LK	L	★	●	.375	.187	.031	.150
DNMG431LK	L	●	●	.500	.187	.016	.203
DNMG432LK	L	●	●	.500	.187	.031	.203
DNMG433LK	L	●	●	.500	.187	.047	.203
DNMG441LK	L	●	●	.500	.250	.016	.203
DNMG442LK	L	●	●	.500	.250	.031	.203
DNMG443LK	L	●	●	.500	.250	.047	.203
DNMG431MA	M	●	●	.500	.187	.016	.203
DNMG432MA	M	●	●	.500	.187	.031	.203
DNMG433MA	M	●	●	.500	.187	.047	.203
DNMG441MA	M	●	●	.500	.250	.016	.203
DNMG442MA	M	●	●	.500	.250	.031	.203
DNMG443MA	M	●	●	.500	.250	.047	.203
NEW DNMG332MK	M	★	●	.375	.187	.031	.150
DNMG431MK	M	●	●	.500	.187	.016	.203
DNMG432MK	M	●	●	.500	.187	.031	.203
DNMG433MK	M	●	●	.500	.187	.047	.203
DNMG441MK	M	●	●	.500	.250	.016	.203
DNMG442MK	M	●	●	.500	.250	.031	.203
DNMG443MK	M	●	●	.500	.250	.047	.203
DNMX432MW	M	●	●	.500	.187	.031	.203
DNMX433MW	M	●	●	.500	.187	.047	.203
DNMX442MW	M	●	●	.500	.250	.031	.203
DNMX443MW	M	●	●	.500	.250	.047	.203







Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
DNMG431GK	M	●	●	.500	.187	.016	.203
DNMG432GK	M	●	●	.500	.187	.031	.203
DNMG433GK	M	●	●	.500	.187	.047	.203
DNMG441GK	M	●	●	.500	.250	.016	.203
DNMG442GK	M	●	●	.500	.250	.031	.203
DNMG443GK	M	●	●	.500	.250	.047	.203
DNMG432RK	R	●	●	.500	.187	.031	.203
DNMG433RK	R	●	●	.500	.187	.047	.203
DNMG442RK	R	●	●	.500	.250	.031	.203
DNMG443RK	R	●	●	.500	.250	.047	.203
DNMA431		●	●	.500	.187	.016	.203
DNMA432		●	●	.500	.187	.031	.203
DNMA433		●	●	.500	.187	.047	.203
DNMA441		●	●	.500	.250	.016	.203
DNMA442		●	●	.500	.250	.031	.203
DNMA443		●	●	.500	.250	.047	.203

MC5005/MC5015

Negative Inserts (With hole)

M Class

SNMG
SNMA

Light Cutting	Medium Cutting	Medium Cutting
LK	MA	MK
		
Rough Cutting	Rough Cutting	For Cast Iron
GK	RK	Flat Top
		

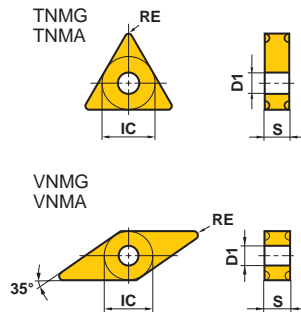
Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
SNMG432LK	L	●	●	.500	.187	.031	.203
SNMG433LK	L	●	●	.500	.187	.047	.203
SNMG431MA	M	●	●	.500	.187	.016	.203
SNMG432MA	M	●	●	.500	.187	.031	.203
SNMG433MA	M	●	●	.500	.187	.047	.203
SNMG432MK	M	●	●	.500	.187	.031	.203
SNMG433MK	M	●	●	.500	.187	.047	.203
SNMG434MK	M	●	●	.500	.187	.063	.203
NEW SNMG543MK	M	★	●	.625	.250	.047	.250
NEW SNMG544MK	M	★	●	.625	.250	.063	.250
SNMG643MK	M	●	●	.750	.250	.047	.312
SNMG644MK	M	●	●	.750	.250	.063	.312

Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
SNMG431GK	M	●	●	.500	.187	.016	.203
SNMG432GK	M	●	●	.500	.187	.031	.203
SNMG433GK	M	●	●	.500	.187	.047	.203
SNMG432RK	R	●	●	.500	.187	.031	.203
SNMG433RK	R	●	●	.500	.187	.047	.203
SNMG434RK	R	●	●	.500	.187	.063	.203
NEW SNMG543RK	R	★	●	.625	.250	.047	.250
NEW SNMG544RK	R	★	●	.625	.250	.063	.250
SNMG643RK	R	●	●	.750	.250	.047	.312
SNMG644RK	R	●	●	.750	.250	.063	.312
SNMA322		●	●	.375	.125	.031	.150
SNMA432		●	●	.500	.187	.031	.203
SNMA433		●	●	.500	.187	.047	.203
SNMA434		●	●	.500	.187	.063	.203
NEW SNMA543		★	●	.625	.250	.047	.250
NEW SNMA544		★	●	.625	.250	.063	.250
SNMA643		●	●	.750	.250	.047	.312
SNMA644		●	●	.750	.250	.063	.312

● : Inventory maintained. ★ : Inventory maintained in Japan.

Negative Inserts (With hole)

M Class



Light Cutting	Medium Cutting	Medium Cutting	Medium Cutting	Rough Cutting	Rough Cutting
LK	MA	MK	MW (Wiper)	GK	RK
					
For Cast Iron	Light Cutting	Medium Cutting	Medium Cutting	Rough Cutting	For Cast Iron
Flat Top	LK	MA	MK	GK	Flat Top
					

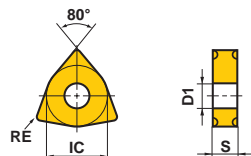
Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
TNMG331LK	L	●	●	.375	.187	.016	.150
TNMG332LK	L	●	●	.375	.187	.031	.150
TNMG333LK	L	●	●	.375	.187	.047	.150
TNMG331MA	M	●	●	.375	.187	.016	.150
TNMG332MA	M	●	●	.375	.187	.031	.150
TNMG333MA	M	●	●	.375	.187	.047	.150
TNMG432MA	M	●	●	.500	.187	.031	.203
TNMG433MA	M	●	●	.500	.187	.047	.203
TNMG331MK	M	●	●	.375	.187	.016	.150
TNMG332MK	M	●	●	.375	.187	.031	.150
TNMG333MK	M	●	●	.375	.187	.047	.150
TNMG432MK	M	●	●	.500	.187	.031	.203
TNMG433MK	M	●	●	.500	.187	.047	.203
TNMG434MK	M	●	●	.500	.187	.063	.203
TNMX332MW	M	●	●	.375	.187	.031	.150
TNMX333MW	M	●	●	.375	.187	.047	.150
TNMG331GK	M	●	●	.375	.187	.016	.150
TNMG332GK	M	●	●	.375	.187	.031	.150
TNMG333GK	M	●	●	.375	.187	.047	.150
TNMG432GK	M	●	●	.500	.187	.031	.203
TNMG433GK	M	●	●	.500	.187	.047	.203
TNMG332RK	R	●	●	.375	.187	.031	.150
TNMG333RK	R	●	●	.375	.187	.047	.150
TNMG334RK	R	●	●	.375	.187	.063	.150
TNMG432RK	R	●	●	.500	.187	.031	.203
TNMG433RK	R	●	●	.500	.187	.047	.203
TNMG434RK	R	●	●	.500	.187	.063	.203
TNMA331		●	●	.375	.187	.016	.150
TNMA332		●	●	.375	.187	.031	.150
TNMA333		●	●	.375	.187	.047	.150
TNMA334		●	●	.375	.187	.063	.150
TNMA335		●	●	.375	.187	.079	.150
TNMA432		●	●	.500	.187	.031	.203
TNMA433		●	●	.500	.187	.047	.203
TNMA434		●	●	.500	.187	.063	.203

Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
VNMG331LK	L	●	●	.375	.187	.016	.150
VNMG332LK	L	●	●	.375	.187	.031	.150
VNMG331MA	M	●	●	.375	.187	.016	.150
VNMG332MA	M	●	●	.375	.187	.031	.150
VNMG331MK	M	●	●	.375	.187	.016	.150
VNMG332MK	M	●	●	.375	.187	.031	.150
VNMG333MK	M	●	●	.375	.187	.047	.150
VNMG331GK	M	●	●	.375	.187	.016	.150
VNMG332GK	M	●	●	.375	.187	.031	.150
VNMG333GK	M	★	●	.375	.187	.047	.150
VNMA331		★	●	.375	.187	.016	.150
VNMA332		★	●	.375	.187	.031	.150
VNMA333		★	●	.375	.187	.047	.150

MC5005/MC5015

Negative Inserts (With hole)

M Class

WNMG
WNMA

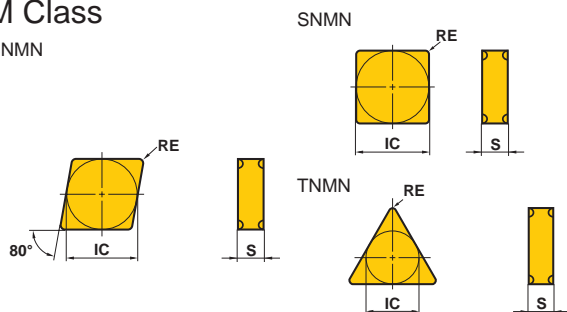
Light Cutting	Light Cutting	Medium Cutting	Medium Cutting	Medium Cutting
LK	SW	MA	MK	MW
				
	(Wiper)			(Wiper)
Rough Cutting	Rough Cutting	For Cast Iron		
GK	RK	Flat Top		
				


Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
WNMG431LK	L	●	●	.500	.187	.016	.203
WNMG432LK	L	●	●	.500	.187	.031	.203
WNMG433LK	L	●	●	.500	.187	.047	.203
WNMG431SW	L	●	●	.500	.187	.016	.203
WNMG432SW	L	●	●	.500	.187	.031	.203
WNMG332MA	M	●	●	.375	.187	.031	.150
WNMG333MA	M	●	●	.375	.187	.047	.150
WNMG431MA	M	●	●	.500	.187	.016	.203
WNMG432MA	M	●	●	.500	.187	.031	.203
WNMG433MA	M	●	●	.500	.187	.047	.203
WNMG431MK	M	●	●	.500	.187	.016	.203
WNMG432MK	M	●	●	.500	.187	.031	.203
WNMG433MK	M	●	●	.500	.187	.047	.203
WNMG434MK	M	●	●	.500	.187	.063	.203
WNMG332MW	M	●	●	.375	.187	.031	.150
WNMG333MW	M	●	●	.375	.187	.047	.150
WNMG432MW	M	●	●	.500	.187	.031	.203
WNMG433MW	M	●	●	.500	.187	.047	.203

Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
WNMG331GK	M	●	●	.375	.187	.016	.150
WNMG332GK	M	●	●	.375	.187	.031	.150
WNMG431GK	M	●	●	.500	.187	.016	.203
WNMG432GK	M	●	●	.500	.187	.031	.203
WNMG433GK	M	●	●	.500	.187	.047	.203
WNMG432RK	R	●	●	.500	.187	.031	.203
WNMG433RK	R	●	●	.500	.187	.047	.203
WNMG434RK	R	●	●	.500	.187	.063	.203
NEW WNMA332		★	●	.375	.187	.031	.150
NEW WNMA333		★	●	.375	.187	.047	.150
WNMA431		●	●	.500	.187	.016	.203
WNMA432		●	●	.500	.187	.031	.203
WNMA433		●	●	.500	.187	.047	.203
WNMA434		●	●	.500	.187	.063	.203

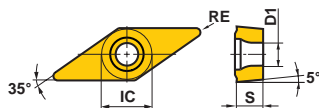
M Class

CNMN



For Cast Iron	For Cast Iron	For Cast Iron
Flat Top	Flat Top	Flat Top
		

Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
NEW CNMN432		★	★	.500	.187	.031	—
NEW CNMN433		★	★	.500	.187	.047	—
NEW CNMN434		★	★	.500	.187	.063	—
SNMN432		●	●	.500	.187	.031	—
SNMN433		●	●	.500	.187	.047	—
SNMN434		●	●	.500	.187	.063	—
TNMN332		●	●	.375	.187	.031	.150
TNMN333		●	●	.375	.187	.047	.150
TNMN334		●	●	.375	.187	.063	.150

VBMT
VBMW

Medium Cutting	Medium Cutting	For Cast Iron
MK	MV	Flat Top
		

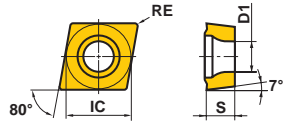
Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
VBMT331MK	M	●	●	.375	.187	.016	.173
VBMT332MK	M	●	●	.375	.187	.031	.173
NEW VBMT221MV	M		●	.250	.125	.016	.114
NEW VBMT222MV	M		●	.250	.125	.031	.114
NEW VBMT331MV	M		●	.375	.187	.016	.173
NEW VBMT332MV	M		●	.375	.187	.031	.173
VBMW332		●	●	.375	.187	.031	.173

11

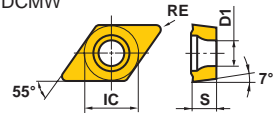
7°Positive inserts (With hole)

M Class

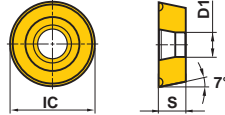
CCMT
CCMH
CCMW



DCMT
DCMW



RCMX



Medium Cutting	Medium Cutting	For Cast Iron	Medium Cutting
MK	MV	Flat Top	MK
Medium Cutting	For Cast Iron	Medium Cutting	
MV	Flat Top	Standard	

Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
CCMT21.51MK	M	●	●	.250	.094	.016	.110
CCMT21.52MK	M	●	●	.250	.094	.031	.110
CCMT32.51MK	M	●	●	.375	.156	.016	.173
CCMT32.52MK	M	●	●	.375	.156	.031	.173
CCMT431MK	M	●	●	.500	.187	.016	.217
CCMT432MK	M	●	●	.500	.187	.031	.217
NEW CCMT433MK	M	★	●	.500	.187	.047	.217
NEW CCMH21.51MV	M		●	.250	.094	.016	.110
CCMW21.51		●	●	.250	.094	.016	.110
CCMW21.52		●	●	.250	.094	.031	.110
CCMW32.51		●	●	.375	.156	.016	.173
CCMW32.52		●	●	.375	.156	.031	.173
CCMW32.53		●	●	.375	.156	.047	.173
CCMW431		●	●	.500	.187	.016	.217
CCMW432		●	●	.500	.187	.031	.217
CCMW433		●	●	.500	.187	.047	.217

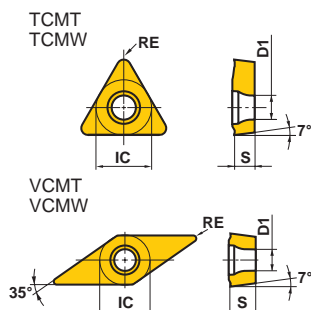
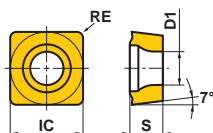
Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
DCMT21.51MK	M	●	●	.250	.094	.016	.110
NEW DCMT21.52MK	M	●	●	.250	.094	.031	.110
DCMT32.51MK	M	●	●	.375	.156	.016	.173
DCMT32.52MK	M	●	●	.375	.156	.031	.173
DCMT431MK	M	●	●	.500	.187	.016	.217
DCMT432MK	M	●	●	.500	.187	.031	.217
NEW DCMT21.51MV	M		●	.250	.094	.016	.110
NEW DCMT21.52MV	M		●	.250	.094	.031	.110
NEW DCMT32.51MV	M		●	.375	.156	.016	.173
NEW DCMT32.52MV	M		●	.375	.156	.031	.173
DCMW21.51		●	●	.250	.094	.016	.110
DCMW32.51		●	●	.375	.156	.016	.173
DCMW32.52		●	●	.375	.156	.031	.173
RCMX1204M0	M		●	.500	.187	—	.165

MC5005/MC5015

7° Positive inserts (With hole)

M Class

SCMT
SCMW



Medium Cutting	For Cast Iron	Medium Cutting	For Cast Iron
MK 	Flat Top 	MK 	Flat Top
Medium Cutting	Medium Cutting	For Cast Iron	
MK 	MV 	Flat Top 	

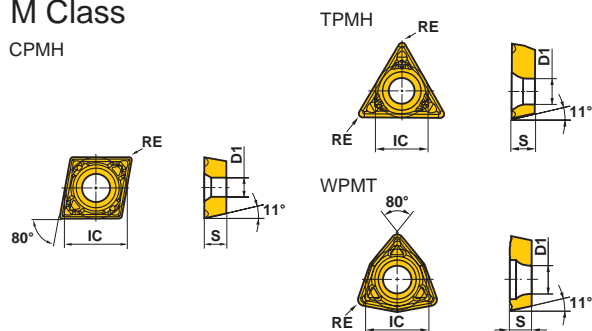
Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
SCMT32.51MK	M	●	●	.375	.156	.016	.173
SCMT32.52MK	M	●	●	.375	.156	.031	.173
NEW SCMT431MK	M	●	●	.500	.187	.016	.217
SCMT432MK	M	●	●	.500	.187	.031	.217
SCMW32.51		●	●	.375	.156	.016	.173
SCMW32.52		●	●	.375	.156	.031	.173
SCMW432		●	●	.500	.187	.031	.217
TCMT21.51MK	M	●	●	.250	.094	.016	.110
NEW TCMT21.52MK	M	●	●	.250	.094	.031	.110
TCMT32.51MK	M	●	●	.375	.156	.016	.173
TCMT32.52MK	M	●	●	.375	.156	.031	.173
TCMT32.53MK	M	●	●	.375	.156	.047	.173
TCMW21.51		●	●	.250	.094	.016	.110
TCMW32.51		●	●	.375	.156	.016	.173
TCMW32.52		●	●	.375	.156	.031	.173
TCMW32.53		●	●	.375	.156	.047	.173

Order Number	Cutting Area	Stock		Dimensions (inch)			
		MC5005	MC5015	IC	S	RE	D1
VCMT331MK	M	●	●	.375	.187	.016	.173
VCMT332MK	M	●	●	.375	.187	.031	.173
NEW VCMT1.51.51MV	M	●	●	.187	.094	.016	.094
VCMW331		●	●	.375	.187	.016	.173
VCMW332		●	●	.375	.187	.031	.173

11°Positive inserts

M Class

CPMH



Medium Cutting	Medium Cutting	Medium Cutting
MV	MV	MV
For Cast Iron		
Flat Top		

			MC5005	MC5015	IC	S	RE	D1
NEW	CPMH2.51.51MV	M		●	.313	.094	.016	.138
NEW	CPMH2.51.52MV	M		●	.313	.094	.031	.138
NEW	CPMH321MV	M		●	.375	.125	.016	.177
NEW	CPMH322MV	M		●	.375	.125	.031	.177
NEW	TPMH1.51.51MV	M		●	.187	.094	.016	.094
NEW	TPMH1.81.51MV	M		●	.219	.094	.016	.114
NEW	TPMH1.81.52MV	M		●	.219	.094	.031	.114
NEW	TPMH221MV	M		●	.250	.125	.016	.134
NEW	TPMH222MV	M		●	.250	.125	.031	.134
NEW	TPMH321MV	M		●	.375	.125	.016	.173
NEW	TPMH322MV	M		●	.375	.125	.031	.173

Order Number	Cutting Area	Stock		Dimensions (mm)			
		MC5005	MC5015	IC	S	RE	D1
NEW	WPMT21.51MV	M	●	.250	.094	.016	.110
NEW	WPMT321MV	M	●	.375	.125	.016	.173
NEW	WPMT322MV	M	●	.375	.125	.031	.173
	TPMN221		●	.250	.125	.016	—
	TPMN222		●	.250	.125	.031	—
	TPMN321		●	.375	.125	.016	—
	TPMN322		●	.375	.125	.031	—
	TPMN323		●	.375	.125	.047	—

RECOMMENDED CUTTING CONDITIONS

Negative Inserts

	Work Material	Tensile Strength	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
K	Cast Iron	≤ 350 MPa	MC5005	690—1970	.004—.020	.012—.236
			MC5015	620—1475	.004—.020	.012—.236
	Ductile Cast Iron	≤ 450 MPa	MC5005	655—1425	.004—.020	.012—.197
			MC5015	590—1295	.004—.020	.012—.197
	Ductile Cast Iron	≤ 800 MPa	MC5005	575—1260	.004—.020	.012—.157
			MC5015	525—1150	.004—.020	.012—.157

*For internal cutting, please refer to the appropriate boring bar conditions.

Positive Inserts

	Work Material	Tensile Strength	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
K	Cast Iron	≤ 350 MPa	MC5005	560—1560	.003—.012	.012—.118
			MC5015	510—1165	.003—.012	.012—.118
	Ductile Cast Iron	≤ 450 MPa	MC5005	525—1130	.003—.012	.012—.098
			MC5015	475—1050	.003—.012	.012—.098
	Ductile Cast Iron	≤ 800 MPa	MC5005	460—1000	.003—.012	.012—.079
			MC5015	425—900	.003—.012	.012—.079

*For internal cutting, please refer to the appropriate boring bar conditions.

Technical Data

Continuous cutting of AISI No.45B



Cutting time 25 min



Cutting time 7 min



Cutting time 9 min



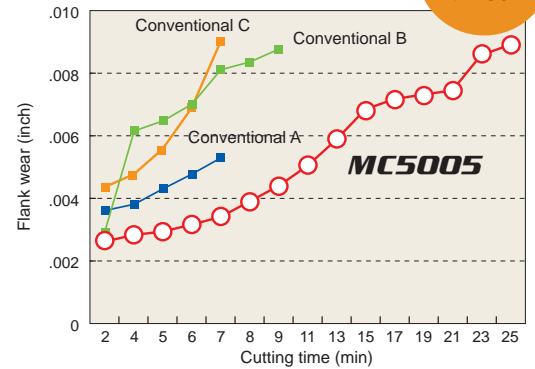
Cutting time 7 min

<Cutting Conditions>

Work material : AISI No.45B
Insert : CNMA433

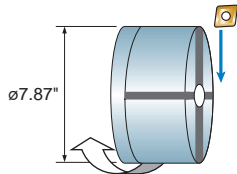
Cutting Speed : 1.475 SFM
Feed : .012 IPR

Depth of Cut : .079 inch
Cutting mode : Dry Cutting



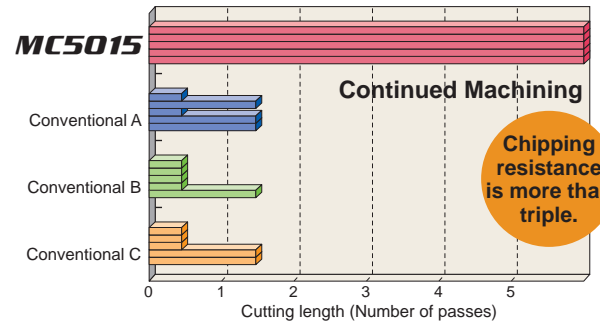
Tool life more than twice.

AISI 100-70-03 interrupted turning



<Cutting Conditions>

Work material : AISI 100-70-03
Insert : CNMA433
Cutting Speed : 490 SFM
Feed : .012 IPR
Depth of Cut : .059 inch
Cutting mode : Wet Cutting



Continued Machining

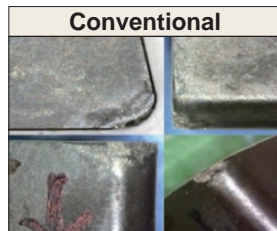
Chipping resistance is more than triple.

AISI No.30B Parts trial No.1

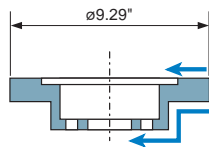
20% increase in tool life was achieved even at 1,970 SFM cutting speeds.



MC5015

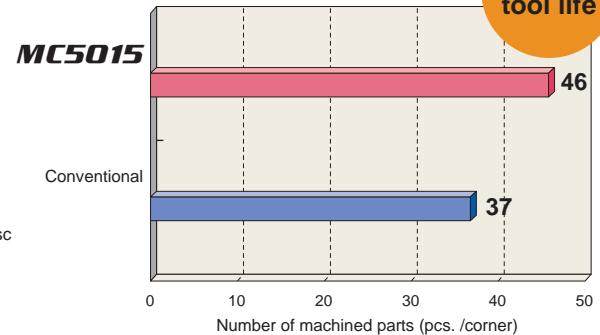


Conventional



<Cutting Conditions>

Work piece : AISI No.30B ID and OD turning of Brake disc
Inserts : WNMA433 Flat Top
Cutting speed : 1,970 SFM
Feed rate : .016 IPR
Depth of cut : .079 inch
Cutting mode : Wet cutting



120% tool life

AISI No.45B Parts trial No.2

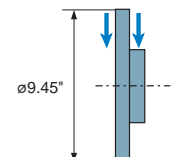
Higher wear resistance than ceramic grades.



Wear .0053 inch

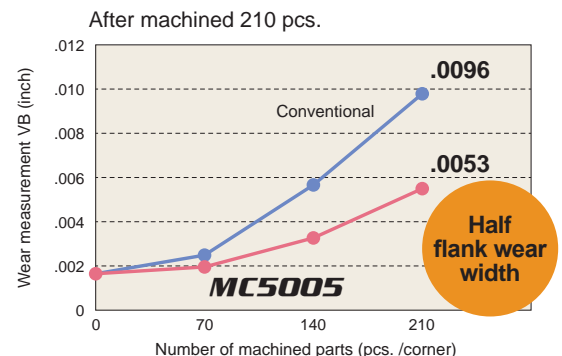


Wear .0096 inch



<Cutting Conditions>

Work piece : AISI No.45B Facing of Brake disc
Inserts : CNMA433 Flat Top
Cutting speed : 1,475 SFM
Feed rate : .010 IPR
Depth of cut : .012 inch
Cutting mode : Dry cutting



Half flank wear width

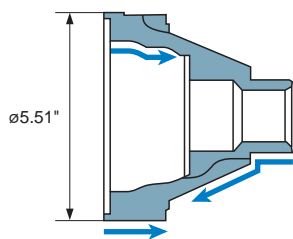
Technical Data

AISI 100-70-03 Parts trial No.3

No breakage of component during interrupted cutting.



Wear .011 inch
After machining 30 pcs.

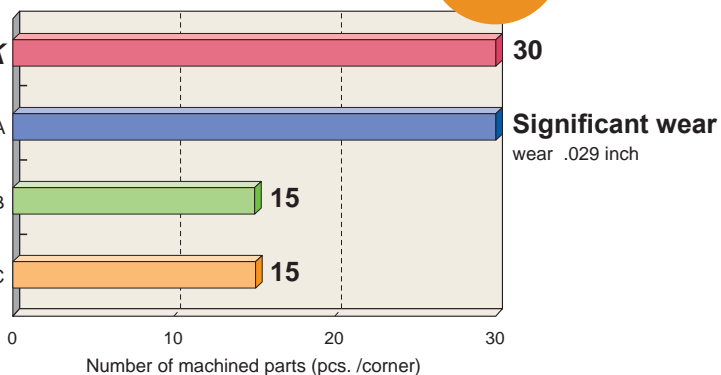


MC5005+MK

Conventional A

Conventional B

Conventional C



<Cutting Conditions>

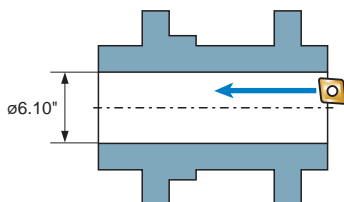
Work piece : AISI 100-70-03 ID and OD turning of Differential case
Insert : WNMG433MK (MC5005)
Cutting Speed : 560-655 SFM
Feed : .014-.020 IPR
Depth of Cut : .059-.079 inch
Cutting mode : Wet Cutting

AISI 100-70-03 Parts trial No.4

Substantial reduction of fracturing when machining thin walls



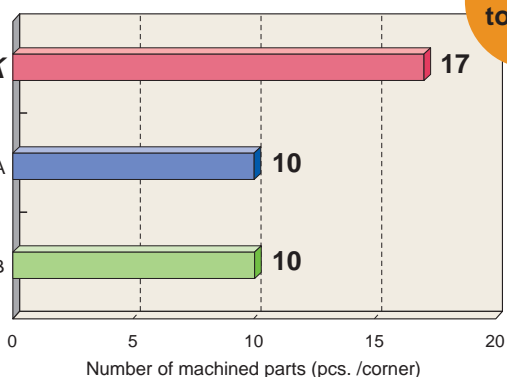
Wear .017 inch
After machining 17 pcs.



MC5015+MK

Conventional A

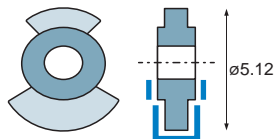
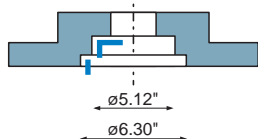
Conventional B

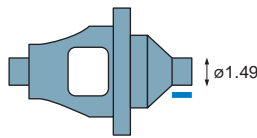
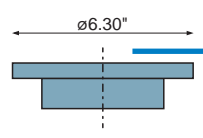


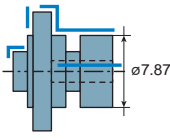
<Cutting Conditions>

Work piece : AISI 100-70-03 ID for case
Insert : CNMG433MK (MC5015)
Cutting Speed : 395 SFM
Feed : .004 IPR
Depth of Cut : Rough=.157 inch, Finish=.118 inch
Cutting mode : Dry Cutting

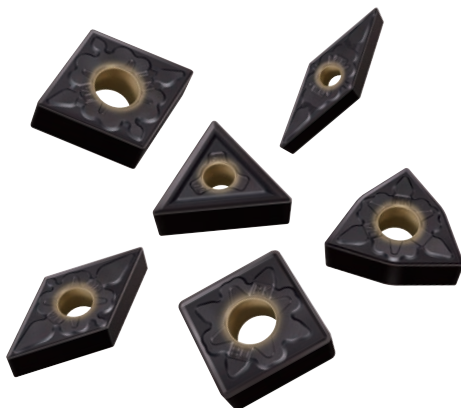
Application Examples

Insert		WNMA433MK (MC5005)	CNMA433 (MC5015)
Work piece		Cast Iron AISI No.35B 	Cast Iron AISI No.30B 
Component		Counter weight	Brake disc
Cutting Conditions	Cutting Speed (SFM)	1,310-1,640	2,130
	Feed (IPR)	.008	.012
	Depth of Cut (inch)	.079	.020
Cutting mode		Wet cutting	Wet cutting
Results		Number of machined parts (pcs. /corner) 50 100 MC5005 77 Conventional 50 When using high efficiency conditions, 1.5 times tool life was achieved.	Number of machined parts (pcs. /corner) 200 400 MC5015 385 Conventional 120 Internal and face cutting gave 1.2 times tool life.

Insert		WNMA433 (MC5015)	CNMG432MK (MC5015)
Work piece		Ductile Cast Iron AISI 80-55-06 	Ductile Cast Iron AISI 80-60-03 
Component		Differential case	Brake disc
Cutting Conditions	Cutting Speed (SFM)	1,150	260
	Feed (IPR)	.019	.014
	Depth of Cut (inch)	.118	.079-.118
Cutting mode		Wet cutting	Wet cutting
Results		Number of machined parts (pcs. /corner) 50 100 MC5015 75 Conventional 60 No damage occurred during high speed roughing of material with scale.	Number of machined parts (pcs. /corner) 100 200 MC5015 130 Conventional 80 External and face roughing gave 1.2 times tool life.

Insert		CNMG544RK (MC5015)
Work piece		Ductile Cast Iron AISI 80-60-03 
Component		Hub
Cutting Conditions	Cutting Speed (SFM)	820
	Feed (IPR)	.020
	Depth of Cut (inch)	.118-.157
Cutting mode		Wet cutting
Results		Number of machined parts (pcs. /corner) 25 50 MC5015 40 Can continue machining Conventional 36 Reduced wear meant the number of pieces machined per edge increased.

New CVD coating for cast iron turning ***MC5005/MC5015***



New chipbreaker system for cast iron turning ***LK/MK/RK***

For your safety

●Don't touch breakers and chips without gloves. ●Please machine within recommended application range, and exchange expired tools with new parts in advance. ●Please use safety cover and wear safety glasses. ●When using compounded cutting oils, please take fire prevention. ●When attaching chips or spare parts, please use the attached wrench or driver. ●When using tools in revolution machining, please make a trial run to check run-out, vibration, abnormal sounds etc.

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