MP9005
MP9015
MP9025
MT9005
MT9015

+

FS/LS
MS/RS

DIA EDGE

9000 SERIES GRADES

THE HIGH AL-RICH (Al,Ti)N SINGLE LAYER COATING SIGNIFICANTLY REDUCES EDGE FRACTURING.

ABOUT OUR BRAND

Your manufacturing success is our success.

It's simple. We want to provide high-quality cutting tool products that help deliver unparalleled performance and control for you to manufacture precisely perfect products every day.

Our long heritage of building partnerships through cutting tool solutions to metal working manufacturers, like yours, has given Mitsubishi Materials USA a solid reputation as an industry leader. We understand the importance of getting it right the first time by delivering high-quality cutting tool product brands to help overcome machining challenges to improve machining processes.

Your success is our success and is the driving force behind our innovative products. Our product brands, DIAEDGE and MOLDINO, are trusted globally in the metal manufacturing and die & mold industries for delivering expertly-designed manufactured tools of the trade for highly specialized industries like yours.

With the acquisition of MOLDINO Tool Engineering, Ltd, our traditional Mitsubishi Materials USA cutting tool product line is now sold under the DIAEDGE product brand name.

Brands you can trust:

MITSUBISHI MATERIALS U.S.A.

TRUSTED PRODUCT BRANDS

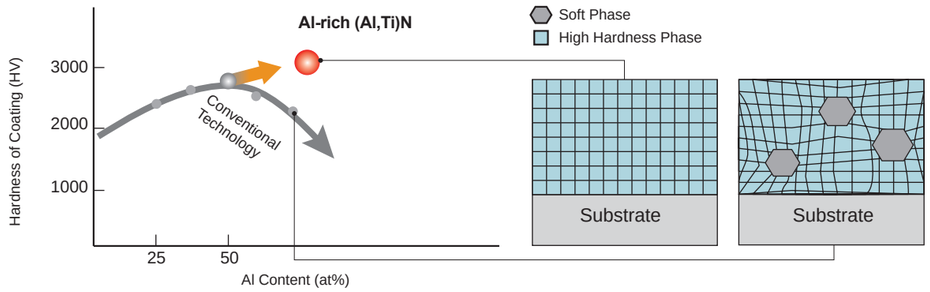
DIAEDGE MOLDINO

9000 Series Grades for Difficult-to-cut Materials

PVD Coated Grade
MP9005/MP9015/MP9025

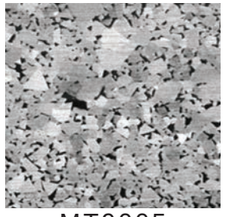
MP9005/MP9015/MP9025

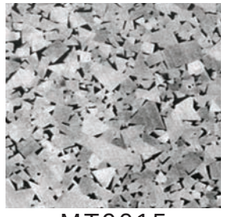
Al and Conventional Coating Comparison
The Al-rich (Al,Ti)N single layer coating provides stabilization of the high hardness phase and succeeds in dramatically improving wear, crater and welding resistance.



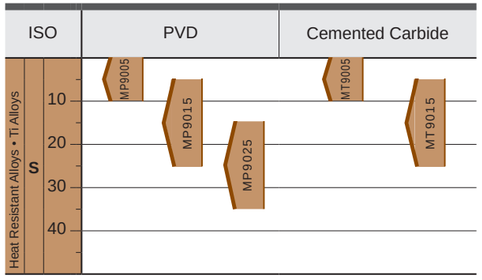
ISO Grade	Grade	Concept	Application
S01	MP9005	Top-quality grade focusing on wear resistance.	Heat Resistant Alloys Finish-Medium Cutting
S10	MP9015	First recommendation for general applications.	Heat Resistant Alloys Medium-Rough Cutting
S30	MP9025	Prevents severe damage for Increased stability.	Heat Resistant Alloys Interrupted • Light-Rough Cutting

Carbide Grade (Non Coated)
MT9005/MT9015


MT9005


MT9015

Application Range



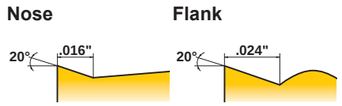
ISO Grade	Grade	Concept	Application
S01	MT9005	Cemented carbide with unmatched resistance to heat and plastic deformation.	Titanium Alloys High Speed Cutting
S10	MT9015	Cemented carbide with sharp cutting edge, excellent wear and fracture resistance.	Titanium Alloys General Cutting

Chip Breaker System

Negative Inserts

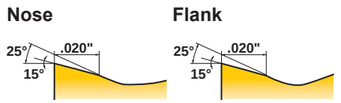
LS Breaker for Light Cutting

Enhanced chip disposal for depths of cut smaller than the corner R.



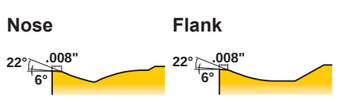
MS Breaker Newly Designed for Medium Cutting

The large 2-step rake angle generates chips smoothly and without tangling during low feed cutting.



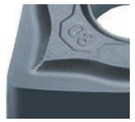
MA Breaker for Medium Cutting

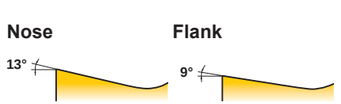
Suitable for medium cutting range.



MJ Breaker Sub Breaker

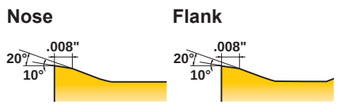
Alternative chip breaker of main chip breaker LS and MS.
Excellent notch wear resistance for light to medium cutting.

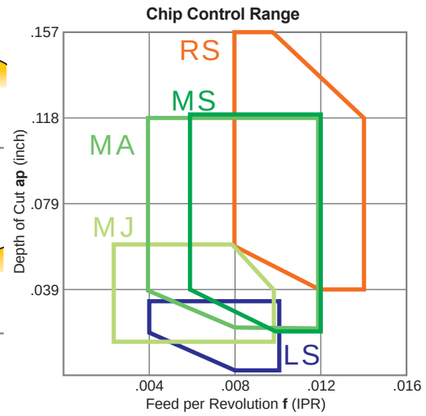




RS Breaker for Rough Cutting

During low speed cutting the positive land controls chip welding and abrasion at the depth of cut line.



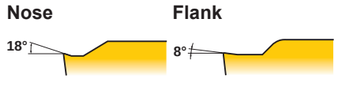


The chip breaker control range was tested for optimum chip evacuation when cutting Inconel718 with a CNMG432◯◯ insert.

Positive Inserts

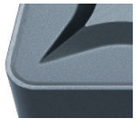
LS Breaker for Light Cutting

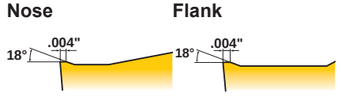
Prevents welding of the insert and controls white turbidity of the surface finish.

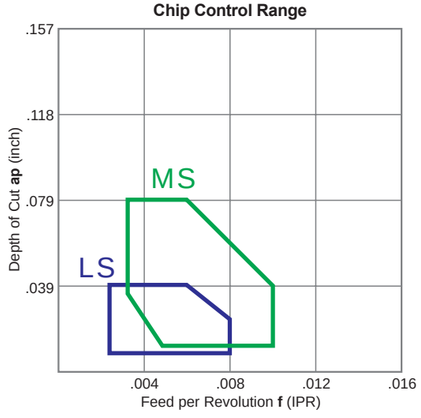


MS Breaker for Medium Cutting

The wide chip pocket reduces cutting resistance, vibration and chip jamming at large depths of cut.







The chip breaker control range was tested for optimum chip evacuation when cutting Inconel718 with a DCMT32.51◯◯ insert.

Precision Chip Breaker System

Negative Inserts NEW

FS Breaker for Finish Cutting

Excellent chip breaking even at very small depths of cut.
The large rake angle and precision grade enables excellent sharpness.

LS Breaker for Light Cutting

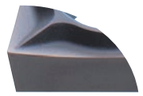
Enhanced chip disposal for depths of cut smaller than the corner R.
Precision grade with excellent sharpness.

Positive Inserts

Set the corner radius to a minus tolerance
CCGT21.51MLS → 1M RE .016 inch (RE .014-.016 inch)

FS/FS-P Breaker for Finish Cutting

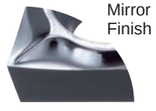
FS



First Recommendation for Finish Cutting of Difficult-to-cut Materials

Ideal for heat resistant alloys, titanium alloys, and cobalt chromium alloys.
Sharp cutting edges provide excellent surface precision and finish.
Highly efficient chip discharge is possible due to curved cutting edges.

FS-P



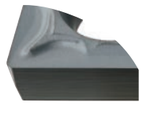
Mirror Finish

First Recommendation for Finish Cutting of Titanium Alloys

Ideal for titanium alloys and copper alloys.
Sharp cutting edges provide excellent surface precision and finish.
Highly efficient chip discharge is possible due to curved cutting edges.
Polished (mirror-surface) finish of insert surfaces drastically improves welding resistance extending tool life.

LS/LS-P Breaker for Light Cutting

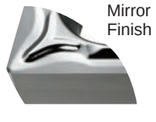
LS



First Recommendation for Light Cutting of Difficult-to-cut Materials

Ideal for heat resistant alloys, titanium alloys, and cobalt chromium alloys.
Designed with straight parallel cutting edges with high depth of cut capabilities.
Achieves stable chip control over a wide depth of cut range.

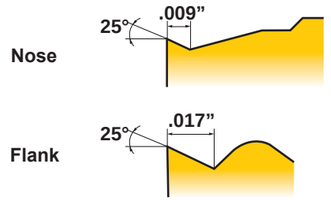
LS-P

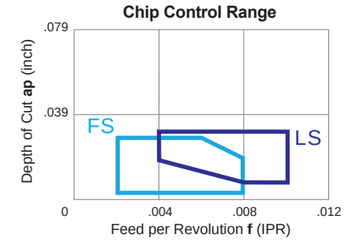


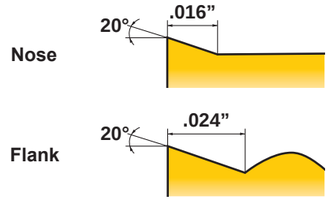
Mirror Finish

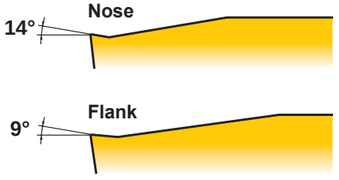
First Recommendation for Light Cutting of Titanium Alloys

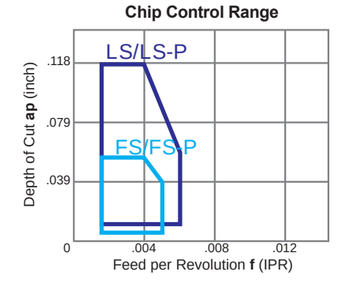
Ideal for titanium alloys and copper alloys.
Designed with straight parallel cutting edges with high depth of cut capabilities.
Achieves stable chip control over a wide depth of cut range.
Polished (mirror-surface) finish of insert surfaces drastically improves welding resistance.

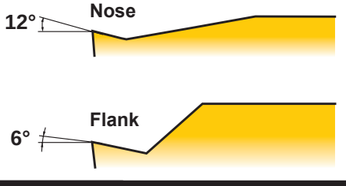








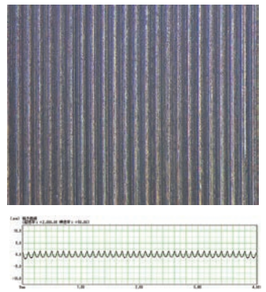




Cutting Performance

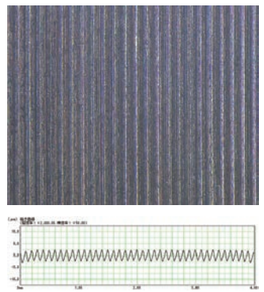
Comparison of Finished Surface of Inconel 718

Excellent machining and chip breaking abilities provide good surface finishes.



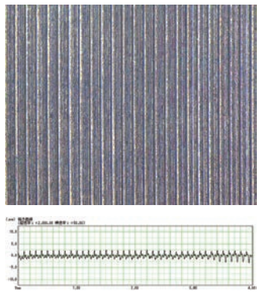
Rz .11934 µ-inch

MP9005
FS **Breaker**



Rz .19269 µ-inch

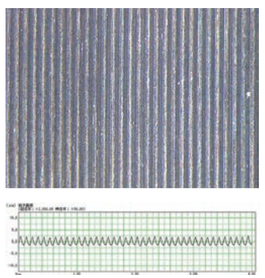
Conventional A



Rz .16598 µ-inch

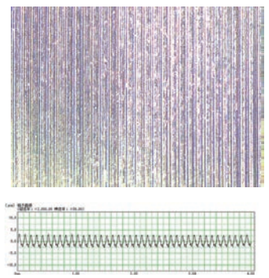
Conventional B

<Cutting Conditions>
Workpiece Material : Inconel 718
Inserts : CNGG431
Cutting Speed : vc = 165 SFM
Feed per Rev. : f = .004 IPR
Depth of Cut : ap = .008 inch
Cutting Mode : Wet Cutting



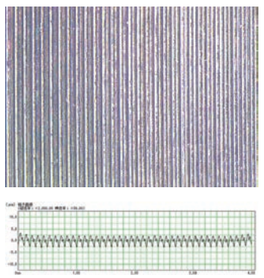
Rz .14575 µ-inch

MP9005
LS **Breaker**



Rz .21606 µ-inch

Conventional A



Rz .21307 µ-inch

Conventional B

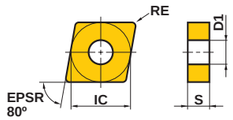
<Cutting Conditions>
Workpiece Material : Inconel 718
Inserts : CNGG431
Cutting Speed : vc = 165 SFM
Feed per Rev. : f = .004 IPR
Depth of Cut : ap = .020 inch
Cutting Mode : Wet Cutting

Negative Inserts (With Hole)

M Class

Light	Light	Medium
LS	MJ	MS
		
Medium	**Rough**	
MA	RS	
		

CNMG



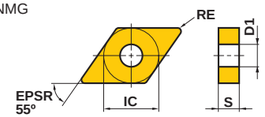
(inch)

Order Number	Cutting Area	MP9005	MP9015	MP9025	MT9015	IC	S	RE	D1
CNMG321LS	L	●	●	●		.375	.125	.016	.150
CNMG322LS	L	●	●	●		.375	.125	.031	.150
CNMG430.5LS	L	●	●	●	●	.500	.187	.008	.203
CNMG431LS	L	●	●	●	●	.500	.187	.016	.203
CNMG432LS	L	●	●	●	●	.500	.187	.031	.203
CNMG431MJ	L	●	●			.500	.187	.016	.203
CNMG432MJ	L	●	●			.500	.187	.031	.203
CNMG433MJ	L	●	●			.500	.187	.047	.203
CNMG434MJ	L	●	●			.500	.187	.063	.203
CNMG321MS	M	●	●	●		.375	.125	.016	.150
CNMG322MS	M	●	●	●		.375	.125	.031	.150
CNMG431MS	M	●	●	●	●	.500	.187	.016	.203
CNMG432MS	M	●	●	●	●	.500	.187	.031	.203
CNMG433MS	M	●	●	●	●	.500	.187	.047	.203
CNMG543MS	M	●	●	●	●	.625	.250	.047	.250
CNMG544MS	M	●	●	●	●	.625	.250	.063	.250
CNMG431MA	M		●	●		.500	.187	.016	.203
CNMG432MA	M		●	●		.500	.187	.031	.203
CNMG433MA	M		●	●		.500	.187	.047	.203
CNMG434MA	M		●	●		.500	.187	.063	.203
CNMG432RS	R		●	●	●	.500	.187	.031	.203
CNMG433RS	R		●	●	●	.500	.187	.047	.203
CNMG434RS	R		●	●	●	.500	.187	.063	.203
CNMG543RS	R		●	●	●	.625	.250	.047	.250
CNMG544RS	R		●	●	●	.625	.250	.063	.250
CNMG643RS	R		●	●	●	.750	.250	.047	.312
CNMG644RS	R		●	●	●	.750	.250	.063	.312

● : USA Stock (10 inserts in one case)

Negative Inserts (With Hole)
M Class

DNMG



Light	Light	Medium
LS	MJ	MS
		
Medium	**Rough**	
MA	RS	
		

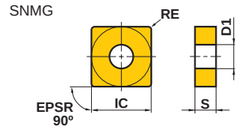
(inch)

Order Number	Cutting Area	MP9005	MP9015	MP9025	MT9015	IC	S	RE	D1
DNMG430.5LS	L	●	●	●	●	.500	.187	.008	.203
DNMG431LS	L	●	●	●	●	.500	.187	.016	.203
DNMG432LS	L	●	●	●	●	.500	.187	.031	.203
DNMG441LS	L	●	●	●	●	.500	.250	.016	.203
DNMG442LS	L	●	●	●	●	.500	.250	.031	.203
DNMG431MJ	L	●	●			.500	.187	.016	.203
DNMG432MJ	L	●	●			.500	.187	.031	.203
DNMG433MJ	L	●	●			.500	.187	.047	.203
DNMG434MJ	L	●	●			.500	.187	.063	.203
DNMG441MJ	L	●	●			.500	.250	.016	.203
DNMG442MJ	L	●	●			.500	.250	.031	.203
DNMG443MJ	L	●	●			.500	.250	.047	.203
DNMG444MJ	L	●	●			.500	.250	.063	.203
DNMG431MS	M	●	●	●	●	.500	.187	.016	.203
DNMG432MS	M	●	●	●	●	.500	.187	.031	.203
DNMG433MS	M	●	●	●	●	.500	.187	.047	.203
DNMG441MS	M	●	●	●	●	.500	.250	.016	.203
DNMG442MS	M	●	●	●	●	.500	.250	.031	.203
DNMG443MS	M	●	●	●	●	.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
DNMG432RS	R		●	●	●	.500	.187	.031	.203
DNMG433RS	R		●	●	●	.500	.187	.047	.203
DNMG434RS	R		●	●	●	.500	.187	.063	.203
DNMG442RS	R		●	●	●	.500	.250	.031	.203
DNMG443RS	R		●	●	●	.500	.250	.047	.203
DNMG444RS	R		●	●	●	.500	.250	.063	.203

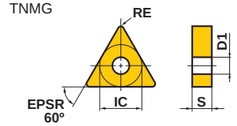
● : USA Stock (10 inserts in one case)

Negative Inserts (With Hole)
M Class

SNMG



TNMG



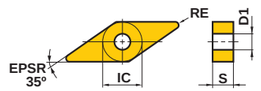
Medium	Medium	Rough		
MS	MA	RS		
				
Light	**Light**	**Medium**	**Medium**	**Rough**
LS	MJ	MS	MA	RS
				

(inch)

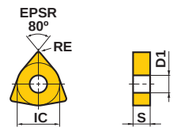
Order Number	Cutting Area	MP9005	MP9015	MP9025	MT9015	IC	S	RE	D1
SNMG431MS	M	●	●	●	●	.500	.187	.016	.203
SNMG432MS	M	●	●	●	●	.500	.187	.031	.203
SNMG433MS	M	●	●	●	●	.500	.187	.047	.203
SNMG543MS	M	●	●	●	●	.625	.250	.047	.250
SNMG544MS	M	●	●	●	●	.625	.250	.063	.250
SNMG643MS	M	●	●	●		.750	.250	.047	.312
SNMG431MA	M		●	●		.500	.187	.016	.203
SNMG432MA	M		●	●		.500	.187	.031	.203
SNMG433MA	M		●	●		.500	.187	.047	.203
SNMG434MA	M		●	●		.500	.187	.063	.203
SNMG432RS	R		●	●	●	.500	.187	.031	.203
SNMG433RS	R		●	●	●	.500	.187	.047	.203
SNMG434RS	R		●	●	●	.500	.187	.063	.203
SNMG544RS	R		●	●	●	.625	.250	.063	.250
SNMG643RS	R		●	●		.750	.250	.047	.312
SNMG644RS	R		●	●	●	.750	.250	.063	.312
TNMG330.5LS	L	●	●	●	●	.375	.187	.008	.150
TNMG331LS	L	●	●	●	●	.375	.187	.016	.150
TNMG332LS	L	●	●	●	●	.375	.187	.031	.150
TNMG331MJ	L	●	●			.375	.187	.016	.150
TNMG332MJ	L	●	●			.375	.187	.031	.150
TNMG333MJ	L	●	●			.375	.187	.047	.150
TNMG331MS	M	●	●	●	●	.375	.187	.016	.150
TNMG332MS	M	●	●	●	●	.375	.187	.031	.150
TNMG333MS	M	●	●	●	●	.375	.187	.047	.150
TNMG432MS	M	●	●	●	●	.500	.187	.031	.203
TNMG433MS	M	●	●	●	●	.500	.187	.047	.203
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
TNMG434MA	M		●	●		.500	.187	.063	.203
TNMG544MA	M		●	●		.625	.250	.063	.250
TNMG666MA	M		●	●		.750	.375	.094	.312
TNMG332RS	R		●	●	●	.375	.187	.031	.150
TNMG333RS	R		●	●	●	.375	.187	.047	.150
TNMG432RS	R		●	●	●	.500	.187	.031	.203
TNMG433RS	R		●	●	●	.500	.187	.047	.203

Negative Inserts (With Hole)
M Class

VNMG



WNMG



Light	Light	Medium		
LS	MJ	MS		
				
Light	**Light**	**Medium**	**Medium**	**Rough**
LS	MJ	MS	MA	RS
				

(inch)

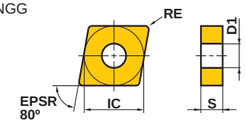
Order Number	Cutting Area	MP9005	MP9015	MP9025	MT9015	IC	S	RE	D1
VNMG330.5LS	L	●	●	●	●	.375	.187	.008	.150
VNMG331LS	L	●	●	●	●	.375	.187	.016	.150
VNMG332LS	L	●	●	●	●	.375	.187	.031	.150
VNMG331MJ	L	●	●			.375	.187	.016	.150
VNMG332MJ	L	●	●			.375	.187	.031	.150
VNMG333MJ	L	●	●			.375	.187	.047	.150
VNMG331MS	M	●	●	●	●	.375	.187	.016	.150
VNMG332MS	M	●	●	●	●	.375	.187	.031	.150
WNMG430.5LS	L	●	●	●	●	.500	.187	.008	.203
WNMG431LS	L	●	●	●	●	.500	.187	.016	.203
WNMG432LS	L	●	●	●	●	.500	.187	.031	.203
WNMG432MJ	L	●	●			.500	.187	.031	.203
WNMG433MJ	L	●	●			.500	.187	.047	.203
WNMG434MJ	L	●	●			.500	.187	.063	.203
WNMG431MS	M	●	●	●	●	.500	.187	.016	.203
WNMG432MS	M	●	●	●	●	.500	.187	.031	.203
WNMG433MS	M	●	●	●	●	.500	.187	.047	.203
WNMG431MA	M		●	●		.500	.187	.016	.203
WNMG432MA	M		●	●		.500	.187	.031	.203
WNMG433MA	M		●	●		.500	.187	.047	.203
WNMG434MA	M		●	●		.500	.187	.063	.203
WNMG432RS	R		●	●	●	.500	.187	.031	.203
WNMG433RS	R		●	●	●	.500	.187	.047	.203
WNMG434RS	R		●	●	●	.500	.187	.063	.203
WNMG543RS	R		●	●	●	.625	.250	.047	.250

● : USA Stock (10 inserts in one case)

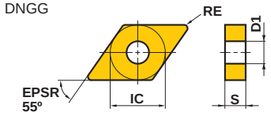
Negative Inserts (With Hole)
G Class

NEW

CNGG



DNGG



Finish	Light
FS	LS
	
Finish	**Light**
FS	LS
	

(inch)

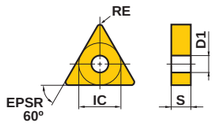
Order Number	Cutting Area	MP9005	MP9015	MP9025	MT9015	IC	S	RE	D1
CNGG43V5FS	F	●	●		●	.500	.187	.002	.203
CNGG430.2FS	F	●	●	●	●	.500	.187	.004	.203
CNGG430.5FS	F	●	●	●	●	.500	.187	.008	.203
CNGG431FS	F	●	●	●	●	.500	.187	.016	.203
CNGG432FS	F	●	●	●	●	.500	.187	.031	.203
CNGG430.5LS	L	●	●	●	●	.500	.187	.008	.203
CNGG431LS	L	●	●	●	●	.500	.187	.016	.203
CNGG432LS	L	●	●	●	●	.500	.187	.031	.203
DNGG430.5FS	F	●	●	●	●	.500	.187	.008	.203
DNGG431FS	F	●	●	●	●	.500	.187	.016	.203
DNGG432FS	F	●	●	●	●	.500	.187	.031	.203
DNGG441FS	F	●	●	●	●	.500	.250	.016	.203
DNGG442FS	F	●	●	●	●	.500	.250	.031	.203
DNGG430.5LS	L	●	●	●	●	.500	.187	.008	.203
DNGG431LS	L	●	●	●	●	.500	.187	.016	.203
DNGG432LS	L	●	●	●	●	.500	.187	.031	.203
DNGG441LS	L	●	●	●	●	.500	.250	.016	.203
DNGG442LS	L	●	●	●	●	.500	.250	.031	.203

Negative Inserts (With Hole)

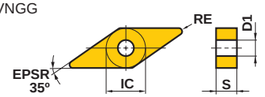
G Class

NEW

TNGG



VNGG



Finish	Light
FS	LS
	
Finish	Light
FS	LS
	

(inch)

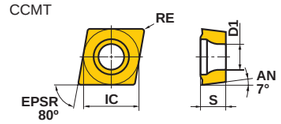
Order Number	Cutting Area	MP9005	MP9015	MP9025	MT9015	IC	S	RE	D1
TNGG330.5FS	F	●	●	●	●	.375	.187	.008	.150
TNGG331FS	F	●	●	●	●	.375	.187	.016	.150
TNGG332FS	F	●	●	●	●	.375	.187	.031	.150
TNGG330.5LS	L	●	●	●	●	.375	.187	.008	.150
TNGG331LS	L	●	●	●	●	.375	.187	.016	.150
TNGG332LS	L	●	●	●	●	.375	.187	.031	.150
VNGG33V5FS	F	●	●		●	.375	.187	.002	.150
VNGG330.2FS	F	●	●	●	●	.375	.187	.004	.150
VNGG330.5FS	F	●	●	●	●	.375	.187	.008	.150
VNGG331FS	F	●	●	●	●	.375	.187	.016	.150
VNGG332FS	F	●	●	●	●	.375	.187	.031	.150
VNGG330.5LS	L	●	●	●	●	.375	.187	.008	.150
VNGG331LS	L	●	●	●	●	.375	.187	.016	.150
VNGG332LS	L	●	●	●	●	.375	.187	.031	.150

● : USA Stock (10 inserts in one case)

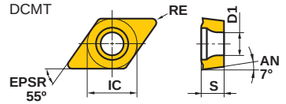
7° Positive Inserts (With Hole)

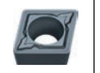
M Class

CCMT



DCMT



Light	Medium
LS	MS
	
Light	Medium
LS	MS
	

(inch)

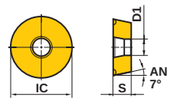
Order Number	Cutting Area	MP9005	MP9015	MP9025	MT9005	IC	S	RE	D1
CCMT21.50.5LS	L	●	●	●	●	.250	.094	.008	.110
CCMT21.51LS	L	●	●	●	●	.250	.094	.016	.110
CCMT32.50.5LS	L	●	●	●	●	.375	.156	.008	.173
CCMT32.51LS	L	●	●	●	●	.375	.156	.016	.173
CCMT32.52LS	L	●	●	●	●	.375	.156	.031	.173
CCMT21.50.5MS	M	●	●	●	●	.250	.094	.008	.110
CCMT21.51MS	M	●	●	●	●	.250	.094	.016	.110
CCMT21.52MS	M	●	●	●	●	.250	.094	.031	.110
CCMT32.50.5MS	M	●	●	●		.375	.156	.008	.173
CCMT32.51MS	M	●	●	●	●	.375	.156	.016	.173
CCMT32.52MS	M	●	●	●	●	.375	.156	.031	.173
CCMT431MS	M	●	●	●	●	.500	.187	.016	.217
CCMT432MS	M	●	●	●	●	.500	.187	.031	.217
CCMT433MS	M	●	●	●	●	.500	.187	.047	.217
DCMT21.50.5LS	L	●	●	●	●	.250	.094	.008	.110
DCMT21.51LS	L	●	●	●	●	.250	.094	.016	.110
DCMT32.50.5LS	L	●	●	●	●	.375	.156	.008	.173
DCMT32.51LS	L	●	●	●	●	.375	.156	.016	.173
DCMT32.52LS	L	●	●	●	●	.375	.156	.031	.173
DCMT21.51MS	M	●	●	●	●	.250	.094	.016	.110
DCMT21.52MS	M	●	●	●	●	.250	.094	.031	.110
DCMT32.51MS	M	●	●	●	●	.375	.156	.016	.173
DCMT32.52MS	M	●	●	●	●	.375	.156	.031	.173
DCMT32.53MS	M	●	●	●	●	.375	.156	.047	.173

7° Positive Inserts (With Hole)

M Class

Medium
Standard

RCMT



(inch)

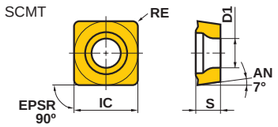
Order Number	Cutting Area	MP9005	MP9015	MP9025	MT9005	MT9015	IC	S	RE	D1
RCMT0602M0	M	●	●	●	●	●	.236	.094	–	.110
RCMT0803M0	M	●	●	●	●	●	.315	.125	–	.134
RCMT10T3M0	M	●	●	●	●	●	.394	.156	–	.173
RCMT1204M0	M	●	●	●	●	●	.472	.187	–	.173
RCMT1606M0	M	●	●	●	●	●	.630	.250	–	.217

● : USA Stock (10 inserts in one case)

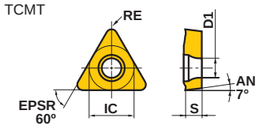
7° Positive Inserts (With Hole)

M Class

SCMT



TCMT



Medium	
MS	

Light	Medium
LS	MS

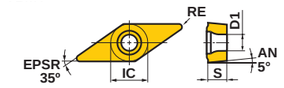
(inch)

Order Number	Cutting Area	MP9005	MP9015	MP9025	MT9005	IC	S	RE	D1
SCMT32.51MS	M	●	●	●	●	.375	.156	.016	.173
SCMT32.52MS	M	●	●	●	●	.375	.156	.031	.173
SCMT431MS	M	●	●	●	●	.500	.187	.016	.217
SCMT432MS	M	●	●	●	●	.500	.187	.031	.217
SCMT433MS	M	●	●	●	●	.500	.187	.047	.217
TCMT1.81.50.5LS	L	●	●	●	●	.219	.094	.008	.098
TCMT21.50.5LS	L	●	●	●	●	.250	.094	.008	.110
TCMT1.81.51MS	M	●	●	●	●	.219	.094	.016	.098
TCMT1.81.52MS	M	●	●	●	●	.219	.094	.031	.098
TCMT21.51MS	M	●	●	●		.250	.094	.016	.110
TCMT21.52MS	M	●	●	●		.250	.094	.031	.110
TCMT32.51MS	M	●	●	●	●	.375	.156	.016	.173
TCMT32.52MS	M	●	●	●	●	.375	.156	.031	.173
TCMT32.53MS	M	●	●	●	●	.375	.156	.047	.173

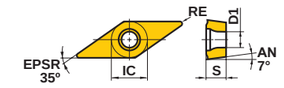
5° and 7° Positive Inserts (With Hole)

M Class

VBMT



VCMT



Light	Medium
LS	MS
	

Light	Medium
LS	MS
	

(inch)

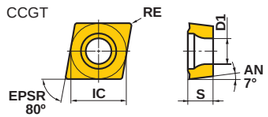
Order Number	Cutting Area	MP9005	MP9015	MP9025	MT9005	IC	S	RE	D1
VBMT220.5LS	L	●	●	●	●	.250	.125	.008	.115
VBMT221LS	L	●	●	●	●	.250	.125	.016	.115
VBMT222LS	L	●	●	●	●	.250	.125	.031	.115
VBMT331LS	L	●	●	●	●	.375	.187	.016	.173
VBMT332LS	L	●	●	●	●	.375	.187	.031	.173
VBMT330.5MS	M	●	●	●	●	.375	.187	.008	.173
VBMT331MS	M	●	●	●	●	.375	.187	.016	.173
VBMT332MS	M	●	●	●	●	.375	.187	.031	.173
VBMT333MS	M	●	●	●	●	.375	.187	.047	.173
VCMT220.5LS	L	●	●	●	●	.250	.125	.008	.110
VCMT221LS	L	●	●	●	●	.250	.125	.016	.110
VCMT331LS	L	●	●	●	●	.375	.187	.016	.173
VCMT332LS	L	●	●	●	●	.375	.187	.031	.173
VCMT220.5MS	M	●	●	●		.250	.125	.008	.110
VCMT221MS	M	●	●	●	●	.250	.125	.016	.110
VCMT222MS	M	●	●	●	●	.250	.125	.031	.110
VCMT331MS	M	●	●	●	●	.375	.187	.016	.173
VCMT332MS	M	●	●	●	●	.375	.187	.031	.173

● : USA Stock (10 inserts in one case)

7° Positive Inserts (With Hole)

G Class

CCGT



Finish	Finish	Light	Light
FS	FS-P	LS	LS-P
			

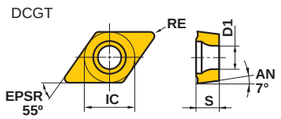
(inch)

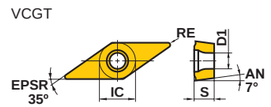
Order Number	Cutting Area	MP9005	MP9015	MP9025	MT9005	IC	S	RE*	D1
CCGT21.50.2MFS	F	●	●	●		.250	.094	.004	.110
CCGT21.50.5MFS	F	●	●	●		.250	.094	.008	.110
CCGT32.50.2MFS	F	●	●	●		.375	.156	.004	.173
CCGT32.50.5MFS	F	●	●	●		.375	.156	.008	.173
CCGT32.51MFS	F	●	●	●		.375	.156	.016	.173
CCGT21.50.2MFS-P	F				●	.250	.094	.004	.110
CCGT21.50.5MFS-P	F				●	.250	.094	.008	.110
CCGT32.50.2MFS-P	F				●	.375	.156	.004	.173
CCGT32.50.5MFS-P	F				●	.375	.156	.008	.173
CCGT32.51MFS-P	F				●	.375	.156	.016	.173
CCGT21.50.2MLS	L	●	●	●		.250	.094	.004	.110
CCGT21.50.5MLS	L	●	●	●		.250	.094	.008	.110
CCGT32.50.2MLS	L	●	●	●		.375	.156	.004	.173
CCGT32.50.5MLS	L	●	●	●		.375	.156	.008	.173
CCGT32.51MLS	L	●	●	●		.375	.156	.016	.173
CCGT21.50.2MLS-P	L				●	.250	.094	.004	.110
CCGT21.50.5MLS-P	L				●	.250	.094	.008	.110
CCGT32.50.2MLS-P	L				●	.375	.156	.004	.173
CCGT32.50.5MLS-P	L				●	.375	.156	.008	.173
CCGT32.51MLS-P	L				●	.375	.156	.016	.173

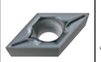
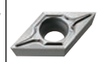
* Nominal Value (Max.)

7° Positive Inserts (With Hole)

G Class





Finish	Finish	Light	Light
FS	FS-P	LS	LS-P
			
Light	**Light**		
LS	LS-P		
			

(inch)

Order Number	Cutting Area	MP9005	MP9015	MP9025	MT9005	IC	S	RE*	D1
DCGT21.50.2MFS	F	●	●	●		.250	.094	.004	.110
DCGT21.50.5MFS	F	●	●	●		.250	.094	.008	.110
DCGT21.51MFS	F	●	●	●		.250	.094	.016	.110
DCGT32.50.2MFS	F	●	●	●		.375	.156	.004	.173
DCGT32.50.5MFS	F	●	●	●		.375	.156	.008	.173
DCGT32.51MFS	F	●	●	●		.375	.156	.016	.173
DCGT21.50.2MFS-P	F				●	.250	.094	.004	.110
DCGT21.50.5MFS-P	F				●	.250	.094	.008	.110
DCGT21.51MFS-P	F				●	.250	.094	.016	.110
DCGT32.50.2MFS-P	F				●	.375	.156	.004	.173
DCGT32.50.5MFS-P	F				●	.375	.156	.008	.173
DCGT32.51MFS-P	F				●	.375	.156	.016	.110
DCGT21.50.2MLS	L	●	●	●		.250	.094	.004	.110
DCGT21.50.5MLS	L	●	●	●		.250	.094	.008	.110
DCGT21.51MLS	L	●	●	●		.250	.094	.016	.110
DCGT32.50.2MLS	L	●	●	●		.375	.156	.004	.173
DCGT32.50.5MLS	L	●	●	●		.375	.156	.008	.173
DCGT32.51MLS	L	●	●	●		.375	.156	.016	.173
DCGT21.50.2MLS-P	L				●	.250	.094	.004	.110
DCGT21.50.5MLS-P	L				●	.250	.094	.008	.110
DCGT21.51MLS-P	L				●	.250	.094	.016	.110
DCGT32.50.2MLS-P	L				●	.375	.156	.004	.173
DCGT32.50.5MLS-P	L				●	.375	.156	.008	.173
DCGT32.51MLS-P	L				●	.375	.156	.016	.173
VCGT220.2MLS	L	●	●	●		.250	.125	.004	.110
VCGT220.5MLS	L	●	●	●		.250	.125	.008	.110
VCGT221MLS	L	●	●	●		.250	.125	.016	.110
VCGT2.520.2MLS	L	●	●	●		.313	.125	.004	.134
VCGT2.520.5MLS	L	●	●	●		.313	.125	.008	.134
VCGT2.521MLS	L	●	●	●		.313	.125	.016	.134
VCGT220.2MLS-P	L				●	.250	.125	.004	.110
VCGT220.5MLS-P	L				●	.250	.125	.008	.110
VCGT221MLS-P	L				●	.250	.125	.016	.110
VCGT2.520.2MLS-P	L				●	.313	.125	.004	.134
VCGT2.520.5MLS-P	L				●	.313	.125	.008	.134
VCGT2.521MLS-P	L				●	.313	.125	.016	.134

* Nominal Value (Max.)

Recommended Cutting Conditions

Negative Inserts

(inch)

	Workpiece Material	Cutting Conditions	Cutting Area	Chip Breaker	Grade	Cutting Speed **vc** (SFM)	Feed **f** (IPR)	Depth of Cut **ap**
M	Precipitation Hardening Stainless Steel (AISI 630)	Stable Cutting	Light Cutting	**LS**	**MP9005**	410—575	.004—.010	.008—.031
			Medium Cutting	**MS**	**MP9005**	375—525	.006—.012	.020—.118
		General Cutting	Light Cutting	**LS**	**MP9015**	395—540	.004—.010	.008—.031
			Medium Cutting	**MS**	**MP9015**	360—490	.006—.012	.020—.118
			Rough Cutting	**RS**	**MP9015**	330—460	.008—.014	.039—.157
		Unstable Cutting	Light Cutting	**LS**	**MP9025**	260—310	.004—.010	.008—.031
			Medium Cutting	**MS**	**MP9025**	245—295	.006—.012	.020—.118
			Rough Cutting	**RS**	**MP9025**	230—280	.008—.014	.039—.157
S	Titanium Alloys (Ti-6Al-4V)	Stable Cutting	Light Cutting	**LS**	**MT9015**	130—280	.004—.010	.008—.031
			Medium Cutting	**MS**	**MT9015**	130—260	.006—.012	.020—.118
			Rough Cutting	**RS**	**MT9015**	115—245	.008—.014	.039—.157
		General Cutting	Light Cutting	**LS**	**MT9015**	130—280	.004—.010	.008—.031
			Medium Cutting	**MS**	**MT9015**	130—260	.006—.012	.020—.118
			Rough Cutting	**RS**	**MT9015**	115—245	.008—.014	.039—.157
		Unstable Cutting	Light Cutting	**LS**	**MT9015**	130—280	.004—.010	.008—.031
			Medium Cutting	**MS**	**MT9015**	130—260	.006—.012	.020—.118
			Rough Cutting	**RS**	**MT9015**	115—245	.008—.014	.039—.157
	Ni Based Heat Resistant Alloys (Inconel718, Hastelloy, WASPALOY) Co Based Heat Resistant Alloys (Tribaloy, Stellite)	Stable Cutting	Light Cutting	**LS**	**MP9005**	100—360	.004—.010	.008—.031
				MJ	**MP9005**	100—360	.003—.010	.016—.059
			Medium Cutting	**MS**	**MP9005**	100—330	.006—.012	.020—.118
			Rough Cutting	**RS**	**MP9015**	65—245	.008—.014	.039—.157
		General Cutting	Light Cutting	**LS**	**MP9015**	80—280	.004—.010	.008—.031
				MJ	**MP9015**	80—280	.003—.010	.016—.059
			Medium Cutting	**MS**	**MP9015**	80—260	.006—.012	.020—.118
				MA	**MP9015**	80—260	.004—.012	.020—.118
			Rough Cutting	**RS**	**MP9015**	65—245	.008—.014	.039—.157
		Unstable Cutting	Light Cutting	**LS**	**MP9025**	65—100	.004—.010	.008—.031
			Medium Cutting	**MS**	**MP9025**	65—100	.006—.012	.020—.118
				MA	**MP9025**	65—100	.004—.012	.020—.118
			Rough Cutting	**RS**	**MP9025**	50—80	.008—.014	.039—.157

Note 1) When cutting conditions are unstable, please refer to page 6 for recommended chip breaker and grade.
Note 2) Verify the recommended conditions for each boring bar as cutting conditions for internal machining will vary depending on the length of overhang.
Note 3) MC7015,MC7025 and MP7035 grade are also recommended for precipitation hardening stainless steels.

Recommended Cutting Conditions

Positive Inserts

(inch)

	Workpiece Material	Cutting Conditions	Cutting Area	Chip Breaker	Grade	Cutting Speed **vc** (SFM)	Feed **f** (IPR)	Depth of Cut **ap**
M	Precipitation Hardening Stainless Steel (AISI 630)	Stable Cutting	Light Cutting	**LS**	**MP9015**	345—460	.002—.008	.008—.039
			Medium Cutting	**MS**	**MP9015**	280—395	.003—.010	.012—.079
		General Cutting	Light Cutting	**LS**	**MP9015**	345—460	.002—.008	.008—.039
			Medium Cutting	**MS**	**MP9015**	280—395	.003—.010	.012—.079
		Unstable Cutting	Light Cutting	**LS**	**MP9025**	230—280	.002—.008	.008—.039
			Medium Cutting	**MS**	**MP9025**	195—230	.003—.010	.012—.079
S	Titanium Alloys (Ti-6Al-4V)	Stable Cutting	Light Cutting	**LS**	**MT9005**	130—260	.002—.008	.008—.039
			Medium Cutting	**MS**	**MT9005**	115—210	.003—.010	.012—.079
		General Cutting	Light Cutting	**LS**	**MT9005**	130—260	.002—.008	.008—.039
			Medium Cutting	**MS**	**MT9005**	115—210	.003—.010	.012—.079
		Unstable Cutting	Light Cutting	**LS**	**MT9005**	130—260	.002—.008	.008—.039
			Medium Cutting	**MS**	**MT9005**	115—210	.003—.010	.012—.079
	Ni Based Heat Resistant Alloys (Inconel718, Hastelloy, WASPALOY) Co Based Heat Resistant Alloys (Tribaloy, Stellite)	Stable Cutting	Light Cutting	**LS**	**MP9005**	80—310	.002—.008	.008—.039
			Medium Cutting	**MS**	**MP9005**	65—260	.003—.010	.012—.079
		General Cutting	Light Cutting	**LS**	**MP9015**	65—245	.002—.008	.008—.039
			Medium Cutting	**MS**	**MP9015**	65—195	.003—.010	.012—.079
		Unstable Cutting	Light Cutting	**LS**	**MP9025**	50—80	.002—.008	.008—.039
			Medium Cutting	**MS**	**MP9025**	50—65	.003—.010	.012—.079

RCMT

(inch)

	Workpiece Material	Cutting Conditions	Cutting Area	Grade	Cutting Speed **vc** (SFM)	Feed **f** (IPR)	Depth of Cut **ap**
M	Precipitation Hardening Stainless Steel (AISI 630)	Stable Cutting	Medium Cutting	**MP9015**	280—395	.010—.018	.059—.118
		General Cutting	Medium Cutting	**MP9015**	280—395	.010—.018	.059—.118
		Unstable Cutting	Medium Cutting	**MP9025**	195—230	.010—.018	.059—.118
S	Titanium Alloys (Ti-6Al-4V)	Stable Cutting	Medium Cutting	**MT9005**	115—210	.010—.018	.059—.118
		General Cutting	Medium Cutting	**MT9005**	115—210	.010—.018	.059—.118
		Unstable Cutting	Medium Cutting	**MT9015**	100—195	.010—.018	.059—.118
	Ni Based Heat Resistant Alloys (Inconel718, Hastelloy, WASPALOY) Co Based Heat Resistant Alloys (Tribaloy, Stellite)	Stable Cutting	Medium Cutting	**MP9005**	65—260	.010—.018	.059—.118
		General Cutting	Medium Cutting	**MP9015**	65—195	.010—.018	.059—.118
		Unstable Cutting	Medium Cutting	**MP9025**	50—65	.010—.018	.059—.118

Note 1) When cutting conditions are unstable, please refer to page 5 for recommended chip breaker and grade.
Note 2) Verify the recommended conditions for each boring bar as cutting conditions for internal machining will vary depending on the length of overhang.
Note 3) MC7015,MC7025 and MP7035 grade are also recommended for precipitation hardening stainless steels.

Precision Negative Inserts

(inch)

	Workpiece Material	Cutting Conditions	Cutting Area	Chip Breaker	Grade	Cutting Speed **vc** (SFM)	Feed **f** (IPR)	Depth of Cut **ap**
S	Titanium Alloys (Ti-6Al-4V)	Stable Cutting	Finish Cutting	**FS**	**MT9015**	150—310	.002—.008	.004—.028
			Light Cutting	**LS**	**MT9015**	130—280	.004—.010	.008—.031
		General Cutting	Finish Cutting	**FS**	**MT9015**	150—310	.002—.008	.004—.028
			Light Cutting	**LS**	**MT9015**	130—280	.004—.010	.008—.031
		Unstable Cutting	Finish Cutting	**FS**	**MT9015**	150—310	.002—.008	.004—.028
			Light Cutting	**LS**	**MT9015**	130—280	.004—.010	.008—.031
	Ni Based Heat Resistant Alloys (Inconel 718, Hastelloy, WASPALOY) Co based Heat Resistant Alloys (Tribaloy, Stellite)	Stable Cutting	Finish Cutting	**FS**	**MP9005**	195—395	.002—.008	.004—.028
			Light Cutting	**LS**	**MP9005**	180—360	.004—.010	.008—.031
		General Cutting	Finish Cutting	**FS**	**MP9015**	150—310	.002—.008	.004—.028
			Light Cutting	**LS**	**MP9015**	130—280	.004—.010	.008—.031
		Unstable Cutting	Finish Cutting	**FS**	**MP9025**	115—165	.002—.008	.004—.028
			Light Cutting	**LS**	**MP9025**	100—150	.004—.010	.008—.031

Precision Positive Inserts

(inch)

	Workpiece Material	Cutting Conditions	Cutting Area	Chip Breaker	Grade	Cutting Speed **vc** (SFM)	Feed **f** (IPR)	Depth of Cut **ap**
M	Precipitation Hardening Stainless Steel (AISI 630)	Stable Cutting	Finish Cutting	**FS**	**MP9005**	360—490	.002—.005	.008—.055
			Light Cutting	**LS**	**MP9015**	345—460	.002—.006	.012—.118
		General Cutting	Finish Cutting	**FS**	**MP9015**	345—460	.002—.005	.008—.055
			Light Cutting	**LS**	**MP9015**	345—460	.002—.006	.012—.118
		Unstable Cutting	Finish Cutting	**FS**	**MP9025**	230—280	.002—.005	.008—.055
			Light Cutting	**LS**	**MP9025**	230—280	.002—.006	.012—.118
S	Titanium Alloys (Ti-6Al-4V)	Stable Cutting	Finish Cutting	**FS-P**	**MT9005**	130—260	.002—.005	.008—.055
			Light Cutting	**LS-P**	**MT9005**	130—260	.002—.006	.012—.118
		General Cutting	Finish Cutting	**FS-P**	**MT9005**	130—260	.002—.005	.008—.055
			Light Cutting	**LS-P**	**MT9005**	130—260	.002—.06	.012—.118
		Unstable Cutting	Finish Cutting	**FS-P**	**MT9005**	130—260	.002—.005	.008—.055
			Light Cutting	**LS-P**	**MT9005**	130—260	.002—.006	.012—.118
	Ni Based Heat Resistant Alloys (Inconel718, Hastelloy, WASPALOY) Co based Heat Resistant Alloys (Tribaloy, Stellite)	Stable Cutting	Finish Cutting	**FS**	**MP9005**	80—310	.002—.005	.008—.055
			Light Cutting	**LS**	**MP9005**	80—310	.002—.006	.012—.118
		General Cutting	Finish Cutting	**FS**	**MP9015**	65—245	.002—.005	.008—.055
			Light Cutting	**LS**	**MP9015**	65—245	.002—.006	.012—.118
		Unstable Cutting	Finish Cutting	**FS**	**MP9025**	50—80	.002—.005	.008—.055
			Light Cutting	**LS**	**MP9025**	50—80	.002—.006	.012—.118

Note 1) When cutting conditions are unstable, please refer to page 7 for recommended chip breaker and grade.
Note 2) Verify the recommended conditions for each boring bar as cutting conditions for internal machining will vary depending on the length of overhang.

For Effective Use of Large Corner Radius

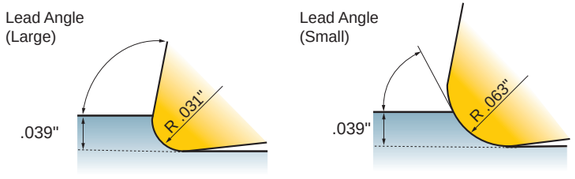
By setting the depth of cut smaller than the corner radius value, notching during cutting of heat resistant alloys can be greatly reduced.

Corner Radius > 1.5 x Depth of Cut

Depth of cut : .039 inch. Corner radius over .059 is recommended.

Point

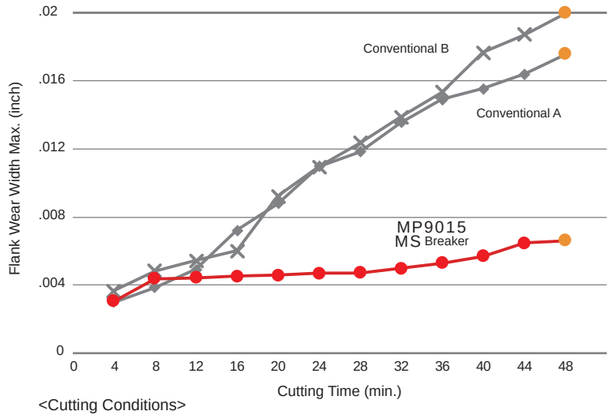
A smaller lead angle is the key to reduced notching.



Memo

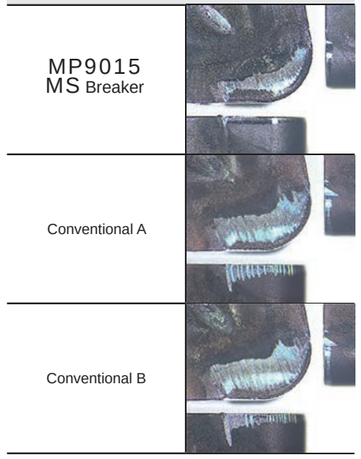
Cutting Performance

Comparison in Continuous Machining of AISI 630

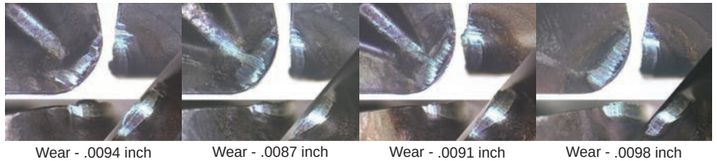


<Cutting Conditions>
Workpiece Material : AISI 630
Inserts : CNMG432◌◌
Machining Methods : External Continuous Cutting
Cutting Speed : vc=395 SFM
Feed per Rev. : f=.008 IPR
Depth of Cut : ap=.059 inch
Cutting Mode : Wet Cutting

Cutting Time : 48min (Wear Photo)



Achieved 2X tool life when machining Inconel718 during continuous machining.



Wear - .0094 inch
Cutting Time 66 min

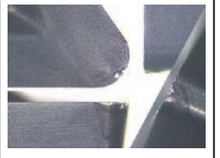
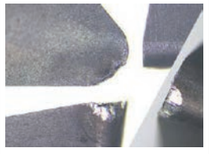
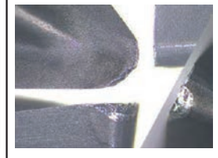
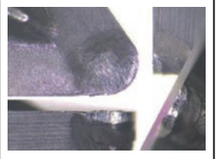
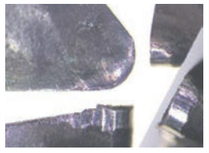
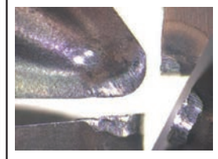
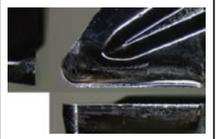
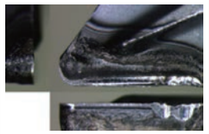
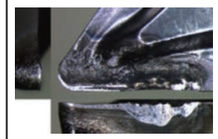
Wear - .0087 inch
Cutting Time 22 min

Wear - .0091 inch
Cutting Time 36 min

Wear - .0098 inch
Cutting Time 16 min

<Cutting Conditions>
Workpiece Material : Inconel718
Inserts : CNMG432◌◌
Cutting Speed : vc=165 SFM
Feed per Rev. : f=.006 IPR
Depth of Cut : ap=.020 inch
Cutting Mode : Wet Cutting

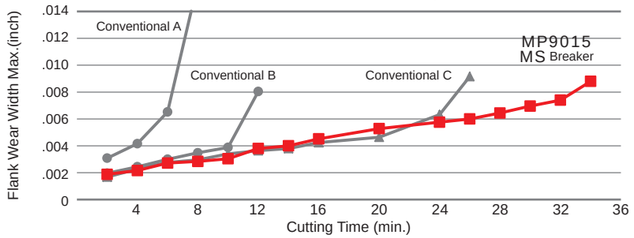
Comparison of Wear Resistance by Workpiece Material

Workpiece Materials and Cutting Conditions	Chip Breaker	Conventional A	Conventional B
Workpiece Material : Co-Cr-Mo Alloy Inserts : DCGT32.51MLS Grade : MP9005 Cutting Speed : vc=130 SFM Feed per Rev. : f=.002 IPR Depth of Cut : ap=.008 inch Cutting Mode : Wet Cutting (Water-soluble) Machine : Swiss-type Lathes Cutting Time : 12 min.			
Workpiece Material : Inconel718 Inserts : DCGT32.51MLS Grade : MP9015 Cutting Speed : vc=195 SFM Feed per Rev. : f=.002 IPR Depth of Cut : ap=.020 inch Cutting Mode : Wet Cutting (Water-soluble) Machine : Swiss-type Lathes Cutting Time : 20 min.			
Workpiece Material : Ti-6Al-4V ELI Inserts : DCGT32.51MLS-P Grade : MT9005 Cutting Speed : vc=260 SFM Feed per Rev. : f=.002 IPR Depth of Cut : ap=.118 inch Cutting Mode : Wet Cutting (Water-insoluble) Machine : Automatic Lathes	 35 Pieces (Non-coat)	 35 Pieces (PVD)	 15 Pieces (PVD)

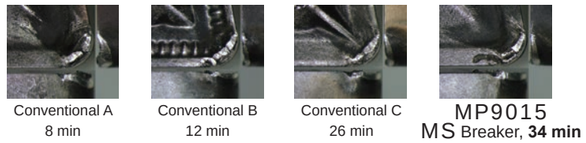
9000 Series Grades for Difficult-to-cut Materials

Cutting Performance

Inconel718, vc=195 SFM Continuous Machining

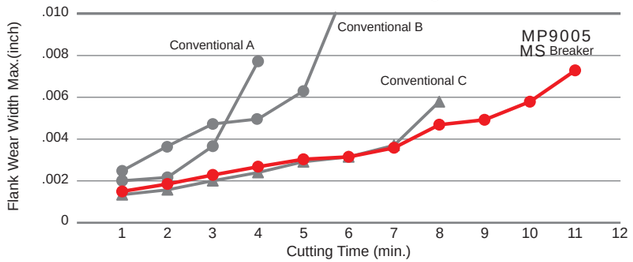


<Cutting Conditions>
Workpiece Material : Inconel718
Inserts : CNMG432◌◌
Cutting Speed : vc=195 SFM
Feed per Rev. : f=.006 IPR
Depth of Cut : ap=.030 inch
Cutting Mode : Wet Cutting



Increased 28% Tool Life

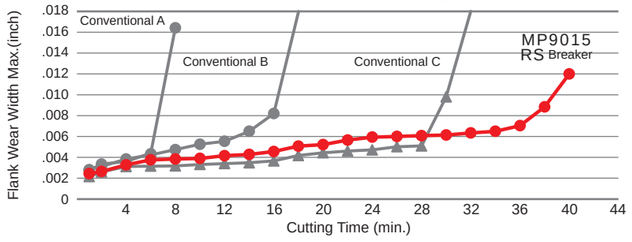
Inconel718, vc=330 SFM Continuous Machining



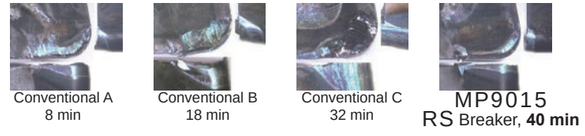
<Cutting Conditions>
Workpiece Material : Inconel718
Inserts : CNMG432◌◌
Cutting Speed : vc=330 SFM
Feed per Rev. : f=.006 IPR
Depth of Cut : ap=.020 inch
Cutting Mode : Wet Cutting

Increased 37% Tool Life

Inconel718, ap=.079 inch Continuous Machining



<Cutting Conditions>
Workpiece Material : Inconel718
Inserts : CNMG432◌◌
Cutting Speed : vc=130 SFM
Feed per Rev. : f=.008 IPR
Depth of Cut : ap=.079 inch
Cutting Mode : Wet Cutting



Increased 33% Tool Life

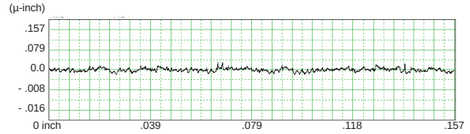
WASPALOY Continuous Machining

MP9015 with RS breaker was smallest damage.

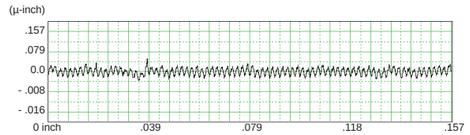
<Cutting Conditions>
Workpiece Material : WASPALOY
Inserts : CNMG432◌◌
Cutting Speed : vc=95 SFM
Feed per Rev. : f=.009 IPR
Depth of Cut : ap=.157 inch
Cutting Time : 7 min
Cutting Mode : Wet Cutting

Cutting Performance

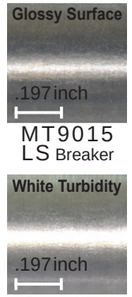
Titanium Alloy, Comparison of Surface Finish (Depth of Cut: .01 inch)



Ra : 5.303 µ-inch Rz : 37.323 µ-inch Rzjis : 24.567 µ-inch



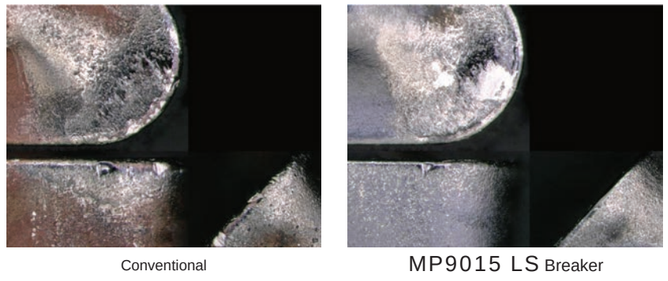
Ra : 10.992 µ-inch Rz : 63.402 µ-inch Rzjis : 51.591 µ-inch

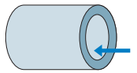


Excellent Finish

<Cutting Conditions>
Workpiece Material : Ti-6Al-6V(325HB)
Inserts : CNMG432◌◌
Cutting Speed : vc=230 SFM
Feed per Rev. : f=.002 IPR
Depth of Cut : ap=.01 inch
Cutting Mode : Wet Cutting

MP9015 with LS breaker was smallest damage.

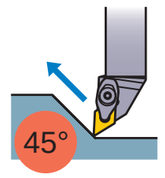




<Cutting Conditions>
Workpiece Material : Heat Resistant Cast Steel
Inserts : DCMT32.51◌◌
Cutting Speed : vc=330 SFM
Feed per Rev. : f=.004 IPR
Depth of Cut : ap=.010 inch
Cutting Mode : Wet Cutting

Chip Control when Back Turning

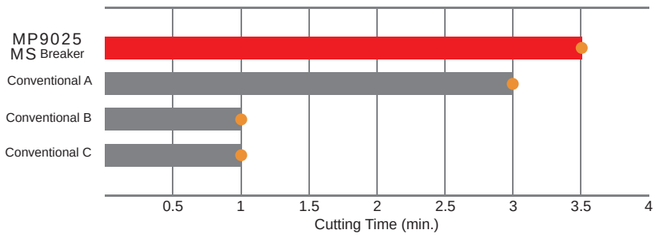
Non-tangling of chips when back turning Inconel718.



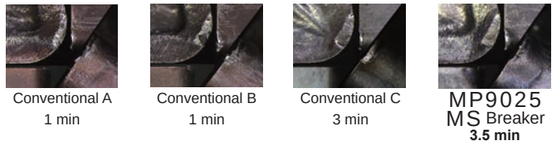
<Cutting Conditions>
Workpiece Material : Inconel718
Inserts : DNMG432◌◌
Cutting Speed : vc=130 SFM
Feed per Rev. : f=.008 IPR
Depth of Cut : ap=.0039 inch
Cutting Mode : Wet Cutting

9000 Series Grades for Difficult-to-cut Materials

Inconel718, vc=100 SFM Interrupted Machining



<Cutting Conditions>
Workpiece Material : Inconel718
Inserts : CNMG432◌◌
Cutting Speed : vc=100 SFM
Feed per Rev. : f=.004 IPR
Depth of Cut : ap=.01 inch
Cutting Mode : Wet Cutting



Increased 16 % Tool Life

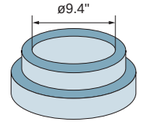
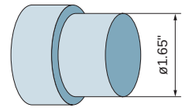
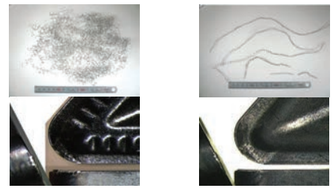
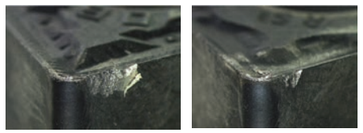
Application Examples

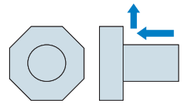
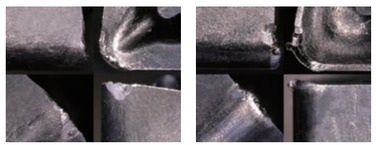
Inserts (Grade)		DCGT32.51MLS (MP9015)	DCGT32.50.5MLS (MP9015)
Workpiece Material		AISI 430 (Forgings)	AISI 630 (17-4PH)
Cutting Conditions	Cutting Speed **vc** (SFM)	260	195
	Feed per Rev. **f** (IPR)	.0031	.0016
	Depth of Cut **ap** (inch)	.012	.012
Cutting Mode		Wet Cutting (Water-insoluble Coolants)	Wet Cutting (Water-insoluble Coolants)
Machine		Swiss-type Lathes	Swiss-type Lathes
Results		Compared to conventional product with inconsistent tool life, whose unstable chip evacuation can cause entanglement of chips in workpiece materials, the LS breaker provided stable chip evacuation allowing machining to be performed up to machining constants. It also exhibited excellent wear conditions after turning.	Even when machining at 1.5X the existing conditions of conventional product, there were no variations in turning surface dimensions. The amount of wear was also extremely small, resulting in longer tool life and cost reduction.

Inserts (Grade)		DCGT32.50.5MFS-P (MT9005)	DCGT21.50.2MFS (MP9015)
Workpiece Material		Ti-6Al-4V ELI	AISI 304
Cutting Conditions	Cutting Speed **vc** (SFM)	210	260
	Feed per Rev. **f** (IPR)	.0024	.0020
	Depth of Cut **ap** (inch)	.030	.012
Cutting Mode		Wet Cutting (Water-insoluble Coolants)	Wet Cutting (Water-insoluble Coolants)
Machine		Swiss-type Lathes	Swiss-type Lathes
Results		Compared to conventional PVD coated product, the cemented carbide MT 9005 (uncoated) provided exceptional machined surface roughness even at 2X the number of cuts. The extremely small amount of wear and stable dimensional precision allowed further machining extension.	Compared to conventional product, the amount of wear was small and chip evacuation was excellent, making it possible to perform machining at 1.5X the existing conditions.

The above application examples are customer's applications, so it can be different from the recommended conditions.

Application Examples

Inserts (Grade)		DNMG432MS (MP9005)	CNMG432RS (MP9015)
Workpiece		Inconel718 (Ni Based Heat Resistant Alloy)  45HRC Aging Treatment	HAYNES Alloy 25 (Co Based Heat Resistant Alloy) 
Component		Disk - Aerospace Component	Cover Plate - Aerospace Component
Application		Internal Turning	External Turning
Cutting Conditions	Cutting Speed **vc** (SFM)	195	110
	Feed per Rev. **f** (IPR)	.006	.008
	Depth of Cut **ap** (inch)	.010 x .591	.059 × 1.654 (3 Pass)
Cutting Mode		Wet Cutting	Wet Cutting
Results		Conventional (S10) / MP9005+MS  MP9005 - Stable machining and less wear with long tool life without chip tangling.	Conventional (S10) / MP9015+RS  Both conventional and MP9015 display notch wear but the conventional grade wear was greater and exposed the substrate.

Inserts (Grade)		CNMG432MA (MP9025)
Workpiece		Inconel718 
Component		Flange
Application		External Turning and Facing
Cutting Conditions	Cutting Speed **vc** (SFM)	115
	Feed per Rev. **f** (IPR)	.006
	Depth of Cut **ap** (inch)	.020
Cutting Mode		Wet Cutting
Results		Conventional / MP9025  1 Piece 2.5 Pieces MP9025 achieved a longer tool life of 2.5 workpieces compared to the conventional product fracturing in the first workpiece.

The above application examples are customer's applications, so it can be different from the recommended conditions.

MTEC MACHINING TECHNOLOGY & EDUCATION CENTER

Welcome to our new world-class Machining Technology and Education Center (MTEC) in Mooresville, NC providing year round support and services to North America.

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TOOLING PROPOSALS & EVALUATION

We will review your current processes or outline a new process. From this review, we will improve productivity, analyze programming methods and output a solution with programming, tooling and time savings.

MACHINING SIMULATION

Using the latest CAD/CAM software and our cutting tool experience, we will outline a new process using proper machining techniques to maximize tool life and productivity.

TECHNICAL SUPPORT

Dedicated local professionals to answer any of your order, product or technical questions.

TRAINING

We are excited to offer several levels of training with goals to reach our highest level--Craftsman Machining Technology. At MTEC NC, we will train using a combination of classroom and hands-on machine time to develop skills and real-world understanding of materials, tools and applications. In addition to multi-day courses, we will have Machining Technology skills seminars, as well as seminars from our partners to complement our apprentice level courses, our journeyman courses, and up to our craftsman level courses.

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For Your Safety

- Don't handle inserts and chips without gloves.
- Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage.
- Please use safety covers and wear safety glasses.
- When using compounded cutting oils, please take fire precautions.
- When attaching inserts or spare parts, please use only the correct wrench or driver.
- When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

MITSUBISHI MATERIALS U.S.A.

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B214A-US-2023.4