MITSUBISHI MATERIALS

MC6100 Series

CVD COATED GRADE FOR STEEL TURNING

MC6115 FP, FPH
MC6125 + MP
MC6135 LP

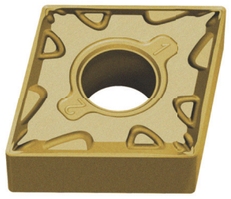
TOOL NEWS **B266A**

CVD Coated Grade for Steel Turning

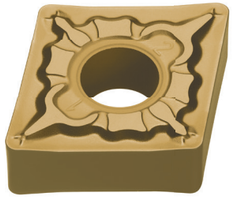
MC6100 Series

Dramatic increase in stability and wear resistance, enabled by utilizing the improved coating adhesion and crystal orientation technology.

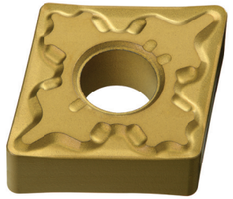
For High Speed Turning
MC6115



First Recommendation
MC6125



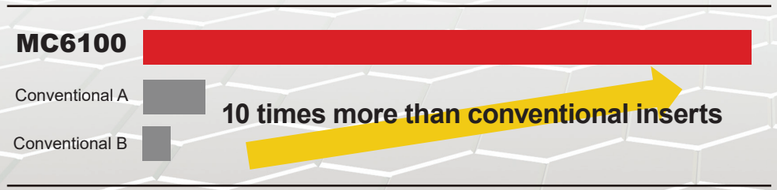
For Fracture Resistance
MC6135



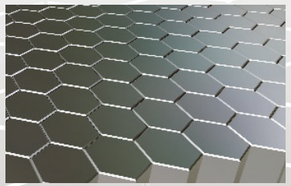
Features

"Super" Nano Texture Technology

The standard Nano Texture Technology has been improved and developed to be an industry leading standard for crystal growth of Al_2O_3 coatings. This Super Nano Texture Technology increases tool life and wear resistance due to the fine, dense crystal growth process.



The ratio of Al_2O_3 crystal grains with the same orientation



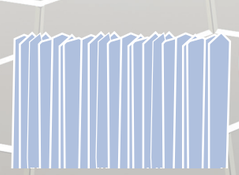
*By Image

Conventional CVD inserts

Grain size and growth direction are uneven.

Nano Texture

Uniformity of the grain size and growth direction has improved.



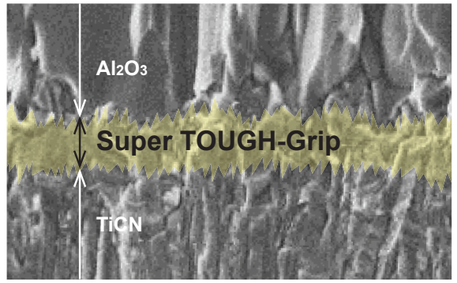
"Super" Nano Texture

Uniformity of the growth direction has drastically improved.

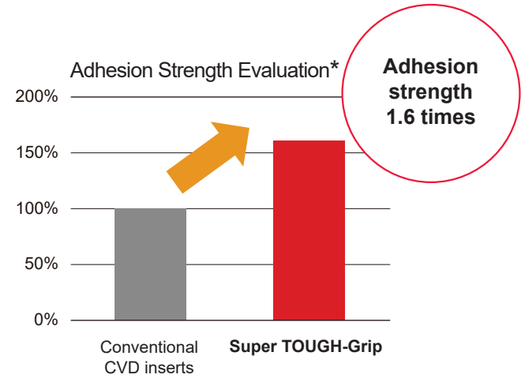
Crystal Orientation

Super TOUGH-Grip

The Super TOUGH-Grip layer has finer crystal grains that enhance the strength of the adhesion between the coating layers.



*By Image



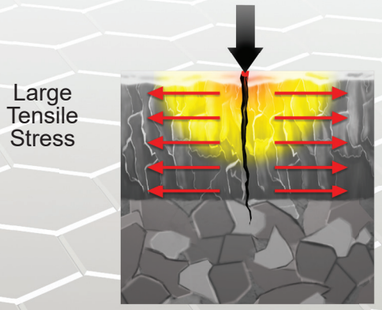
*Adhesion strength measurement is obtained from a scratch test that records the force needed to peel the coating layers.

Protection Against Sudden Fracturing

Cracks that occur during unstable machining are prevented due to the relaxing of the tensile stress in the coating. MC6100 series has an 80% reduction in coating tensile stress compared to conventional CVD inserts.

Relaxing of the Tensile Stress

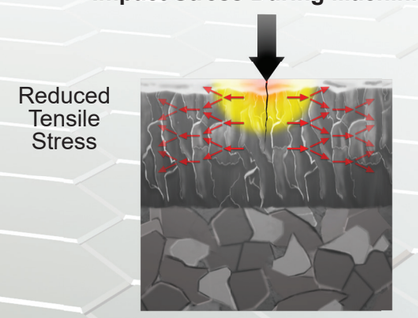
Impact Stress During Machining



Conventional CVD inserts

Cracks are generated in the surface of coatings during machining. They propagate through the coating into the substrate due to the large tensile stress in the coating structure. This creates one of the main causes of sudden insert breakage.

Impact Stress During Machining

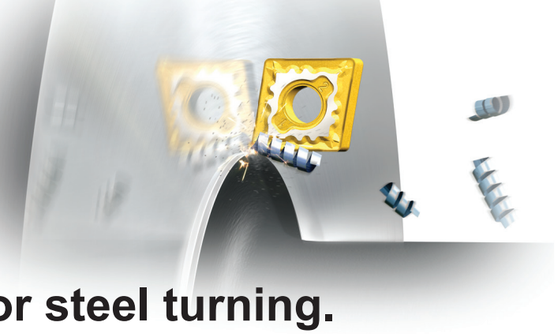


MC6100 Series

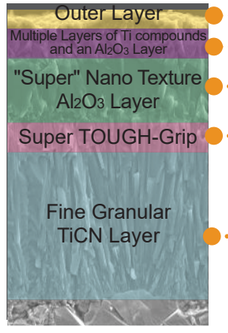
MC6100 series has a much lower level of stress than conventional CVD coatings due to the surface treatment. This divides the force of impacts during machining and protects from sudden fracturing.

CVD Coated Grade for Steel Turning

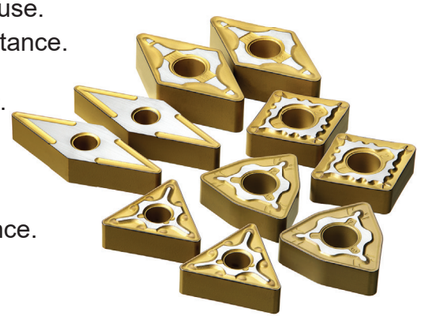
MC6125



First recommended grade for steel turning. Increasing tool life with stable performance over a wider range of applications.



- Outer Layer: Better identification of corner use.
- Multiple Layers of Ti compounds and an Al_2O_3 Layer: Achieves excellent wear resistance.
- "Super" Nano Texture Al_2O_3 Layer: Outstanding wear resistance especially at high temperatures.
- Super TOUGH-Grip: Strong adhesion between the tough coating layers.
- Fine Granular TiCN Layer: Coating for high wear resistance.

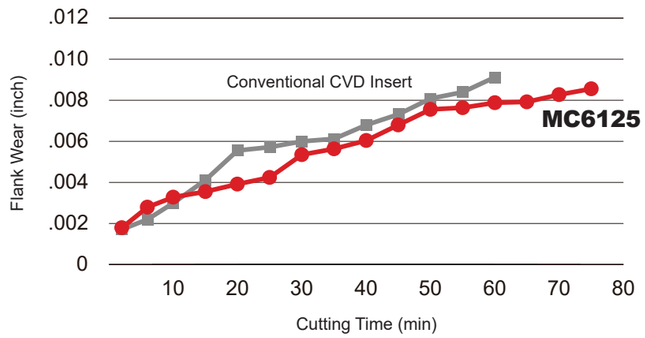


Special Smooth Surface Treatment

MC6125 uses a new surface treatment for the cutting edge for increased stability. Additionally, the seating faces have a special smooth surface treatment that provides improved clamping stability to enable a wider range of applications.

Machining 1045 : Comparison of Wear Resistance

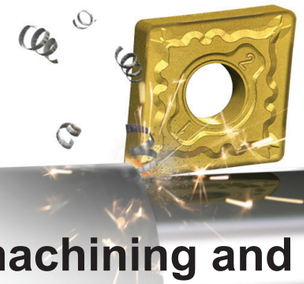
The surface treatment has improved stability and provided longer tool life.



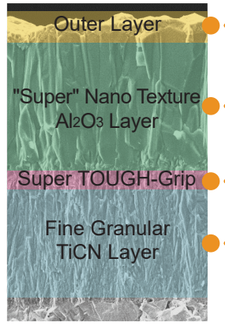
<Cutting Conditions>
Material : AISI 1045
Inserts : CNMG432MA
Cutting Speed : vc = 655 SFM
Feed per Rev. : f=.012 IPR
Depth of Cut : ap =.059 inch
Cutting Mode : Wet Cutting

CVD Coated Grade for Steel Turning

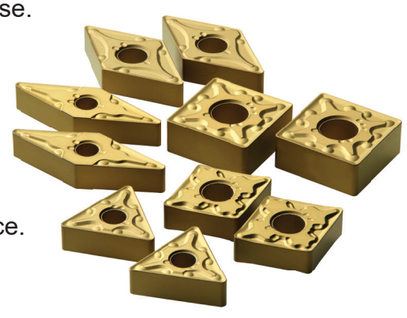
MC6115



MC6115 improves high speed machining and process efficiency with a dramatic increase in resistance to wear and heat.



- Outer Layer: Better identification of corner use.
- "Super" Nano Texture Al_2O_3 Layer: Outstanding wear resistance especially at high temperatures.
- Super TOUGH-Grip: Strong adhesion between the tough coating layers.
- Fine Granular TiCN Layer: Coating for high wear resistance.



Improved Outer Coating (Layer)

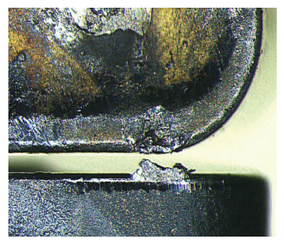
The outer layer of MC6115 restricts chip welding thereby improving the dimensional accuracy and surface roughness of components. This also allows for easy recognition of whether the corner can continue machining.

Example when machining 5120H

When comparing the high edge strength chipbreaker MH with a conventional low resistance chipbreaker, it shows that MC6115 accomplishes both high welding and wear resistance.

After 2 Minutes Machining

MC6115 MH



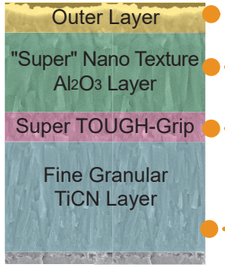
Conventional CVD Insert

<Cutting Conditions>
Material : AISI 5120H 170HB
Inserts : CNMG432MH
Cutting Speed : vc = 655 SFM
Feed per Rev. : f=.012 IPR
Depth of Cut : ap =.059 inch
Cutting Mode : Dry Cutting

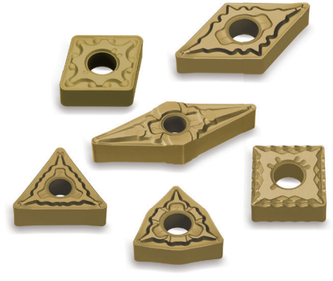
CVD Coated Grade for Steel Turning

MC6135

Optimal versatility for machining continuous through to intermittent applications.



- Better identification of corner use.
- Outstanding wear resistance especially at high temperatures.
- Strong adhesion between the tough coating layers.
- Coating for high wear resistance.

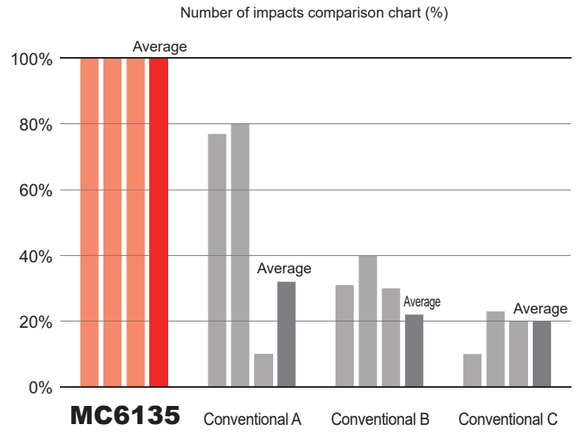


Thinner Coatings Optimized for General Purpose Machining

Industry-leading crystal orientation control technology enables thinner but still impact-resistant coatings provide improved chipping and wear resistance which is optimal for general-purpose use. (50% thinner compared to our conventional coating).

Machining 4140 : Comparison of Toughness During Interrupted Cutting

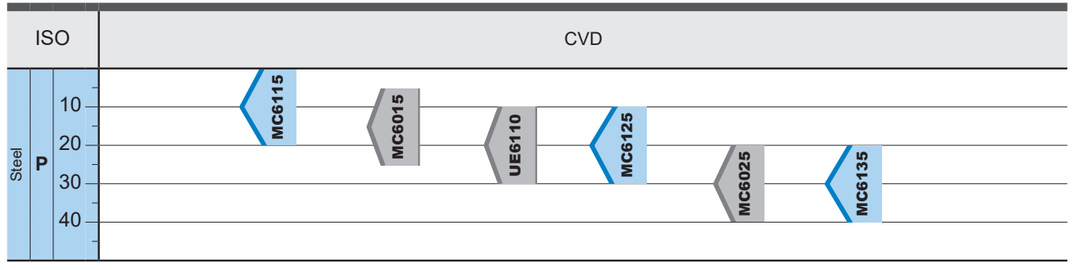
MC6135 shows high stability even during interrupted cutting and can be used over a wide area of applications.



<Cutting Conditions>
Material : AISI 4140
Inserts : CNMG432◌◌
Cutting Speed : vc=655 SFM
Feed per Rev. : f=.014 IPR
Depth of Cut : ap=.098 inch
Cutting Mode : Wet Cutting

Pre-set tool life limit or until damage deteriorates the performance.

Application Range



Selection Criteria

	Material	Cutting Mode	Grade
P	Steel	Continuous Cutting ↑ Low Medium ↓ High Interrupted Cutting	**MC6115**
			MC6125
			MC6135

For Low Depth of Cut and High Feed Finishing

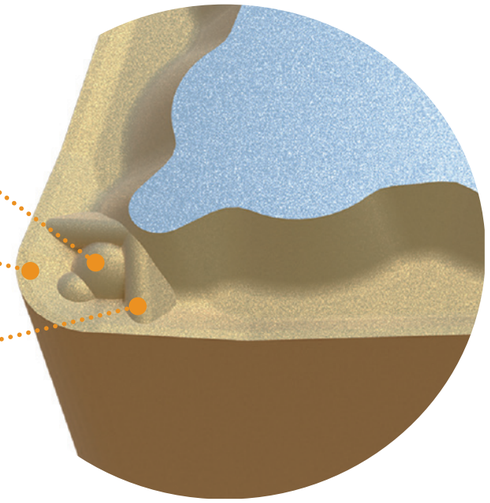
FPH Chipbreaker

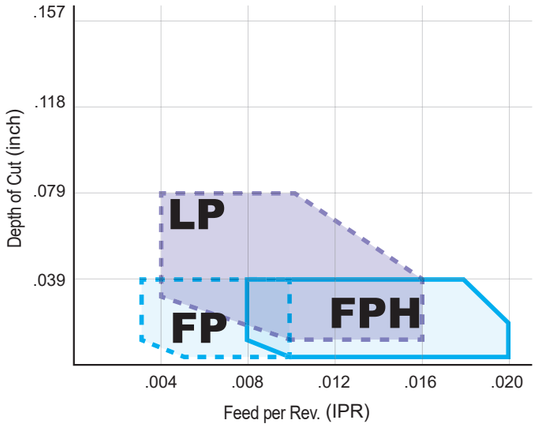
The combination of a positive land cutting edge shape and a two-stage protrusion optimizes chip generation at low depths of cut, high feed conditions, thereby reducing machining times.

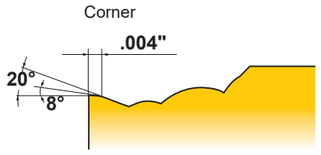
Main Convex
Provides consistent chip curling effect even for the thicker chips produced at high feed rates.

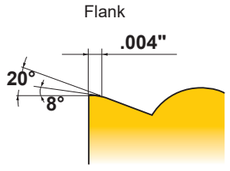
Positive Land
Optimum balance of sharpness and fracture resistance.

Sub Convex
Enables good chip breaking when copy turning with varying depths of cut.









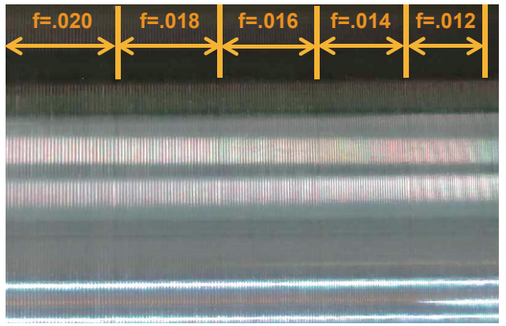
HOW TO USE

1.When using the FPH chipbreaker, keep the depth of cut to .039 inch or less and the feed rate per revolution to .008 IPR or more.
2.If the depth of cut is .039 inch or more, we recommend using an LP chipbreaker.
3.If the feed rate per revolution is less than .008 IPR, we recommend an FP chipbreaker.

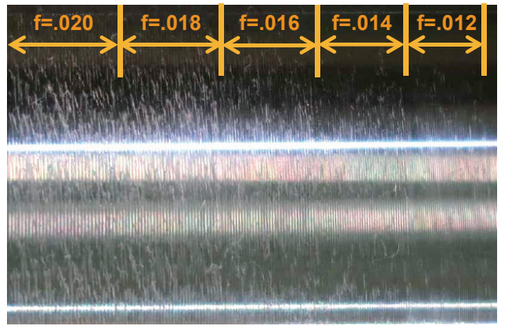
Cutting Performance

4140 : Comparison of Chips and Finished Surface

The FPH chipbreaker has excellent chip breaking properties. Therefore a good component surface finish can always be expected.



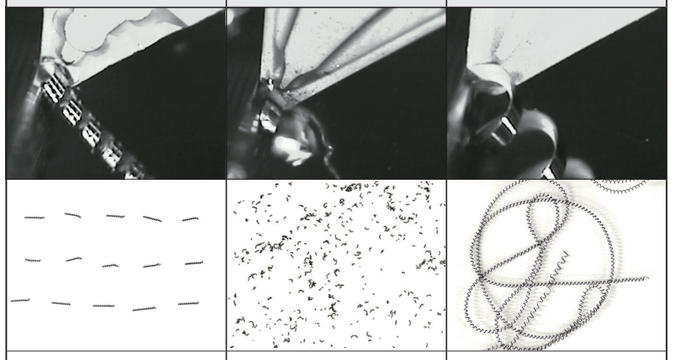
MC6125+FPH

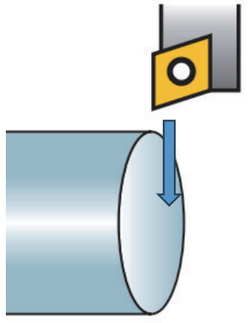


Conventional

<Cutting Conditions>
Material : AISI 4140
Inserts : CNMG432-◯◯ MC6125
Cutting Speed : vc=655 SFM
Depth of Cut : ap=.008 inch
Feed per Rev. : f=The fluctuation values are shown in the image.
Cutting Mode : Wet Cutting

Chip Comparison

FPH	Conventional finish cutting chipbreaker	Conventional light cutting chipbreaker
		
Breakage into pieces of ideal length	Excessive division This is a condition where the finished surface is prone to scratches.	Long chips are being generated. There is a high risk of it wrapping around the workpiece and interrupting the machining process



<Cutting Conditions>
Material : AISI 4140
Inserts : DNMG432-◯◯
Cutting Speed : 655 SFM
Feed per Rev. : f=.012 IPR
Depth of Cut : ap=.008 inch
Cutting Mode : Dry Cutting

Chipbreaker System for Steel Turning

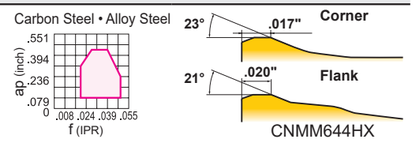
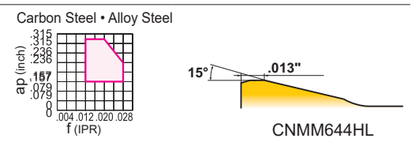
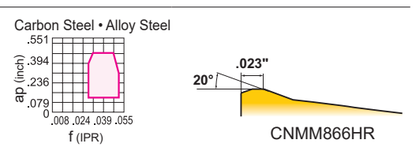
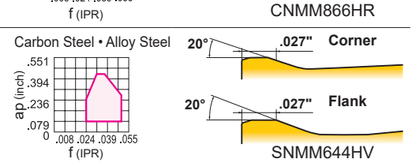
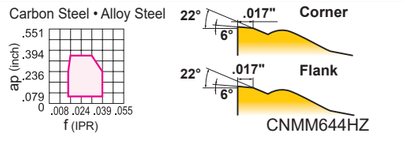
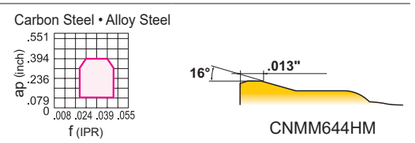
Negative Inserts

Application	Tolerance	Chipbreaker Name and Picture	Features	Cross Section Geometry
Finish Cutting	M	**FP** 	**First recommendation for finishing carbon steel and alloy steel** Controls chip clogging during high-feed cutting and prevents chips of soft materials from running onto their surfaces. Large rake angle suppress chatter vibration and deformation in machining of low rigidity workpiece.	Carbon Steel • Alloy Steel ap (inch) .157 .118 .079 .039 0 f (IPR) .004 .012 .020 Corner 20° Flank 20° CNMG432FP
		FH 	**Alternative chipbreaker for finishing carbon steel and alloy steel** Stable chip control even at small depths of cut.	Carbon Steel • Alloy Steel ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016 Corner 12° Flank 12° CNMG432FH
		FS 	**Alternative chipbreaker for finishing mild steel** Stable chip control even at small depths of cut. Sharp edge gives best performance.	Mild Steel ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016 Corner 16° Flank 8° CNMG432FS
		FY 	**First recommendation for finishing mild steel** Effectively controls adhesive chips. Suitable for mild steel finishing.	Mild Steel ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016 Corner 15° Flank .008" 15° CNMG432FY
Light Cutting	M	**LP** 	**First recommendation for light cutting of carbon steel and alloy steel** Stable chip control in the light cutting area. The curved edge allows smooth chip discharge.	Carbon Steel • Alloy Steel ap (inch) .157 .118 .079 .039 0 f (IPR) .004 .012 .020 Corner .004" 15° Flank .008" 11° CNMG432LP
		SH 	**Alternative chipbreaker for light cutting of carbon steel and alloy steel** Can be used at low depth of cuts and high feed rates. The curved edge allows smooth chip discharge. Recommended for workpieces in the 160—250HB range.	Carbon Steel • Alloy Steel ap (inch) .157 .118 .079 .039 0 f (IPR) .004 .012 .020 Corner 15° Flank .008" 15° CNMG432SH
		SA 	**Alternative chipbreaker for light cutting of carbon steel and alloy steel** Superior chip control at small depth of cuts. Covers copying and back turning with wavy edge. Recommended for workpieces in the 200—300HB range.	Carbon Steel • Alloy Steel ap (inch) .157 .118 .079 .039 0 f (IPR) .004 .012 .020 Corner .012" 25° 10° Flank .013" 25° 8° CNMG432SA
		SW 	**Wiper insert for light cutting of carbon steel, alloy steel, stainless steel and cast iron** In comparison to conventional chipbreaker, the surface finish is maintained even if the feed per revolution is doubled. Wiper design for increased productivity and improved surface finish.	Carbon Steel • Alloy Steel ap (inch) .157 .118 .079 .039 0 f (IPR) .004 .012 .020 Corner .006" 18° 7° Flank .006" 18° 7° CNMG432SW
		SY 	**First recommendation for light cutting of mild steel** Effectively controls adhesive chips. Suitable for light cutting of mild steel.	Mild Steel ap (inch) .157 .118 .079 .039 0 f (IPR) .004 .012 .020 Corner 10° Flank .008" 10° CNMG432SY

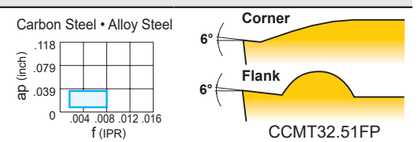
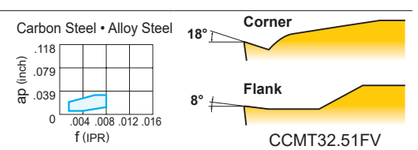
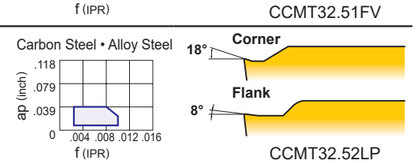
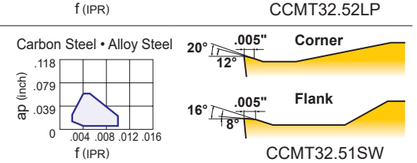
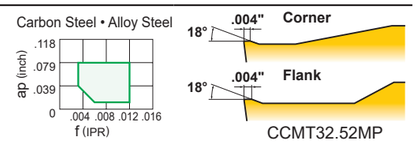
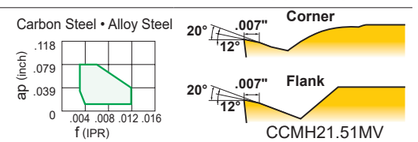
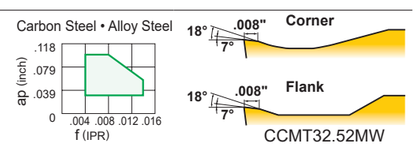
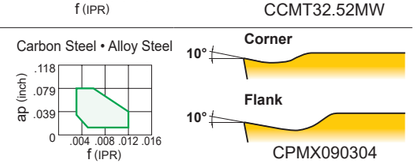
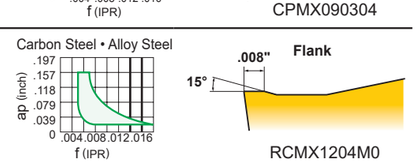
Application	Tolerance	Chipbreaker Name and Picture	Features	Cross Section Geometry
Medium Cutting	M	**MP** 	**First recommendation for medium cutting of carbon steel and alloy steel** Suitable for medium to light cutting. Chipbreaker geometry appropriate for copying and back turning. Cutting edge geometry for an optimum balance of sharpness and fracture resistance.	Carbon Steel • Alloy Steel ap (inch) .197 .157 .118 .079 .039 0 f (IPR) .004 .012 .020 Corner .006" 15° Flank .008" 11° CNMG432MP
		MS 	**Alternative chipbreaker for medium cutting** The sharp edge gives best performance. Flat top chipbreaker shape offers high edge strength. Applicable to grades other than MP9005, MP9015, MP9025, MT9015	Carbon Steel • Alloy Steel ap (inch) .197 .157 .118 .079 .039 0 f (IPR) .004 .012 .020 Corner .020" 25° 15° Flank .020" 25° 15° CNMG432MS
		MA 	**Multi-Assist chipbreaker for medium cutting of carbon steel and alloy steel** Ideal for general cutting applications. Positive land provides sharp cutting action.	Carbon Steel • Alloy Steel ap (inch) .197 .157 .118 .079 .039 0 f (IPR) .004 .012 .020 Corner .008" 22° 6° Flank .008" 22° 6° CNMG432MA
		MH 	**Alternative chipbreaker for medium cutting of carbon steel and alloy steel** Flat land offers high edge strength. Good chip control enabled by a suitable chip pocket.	Carbon Steel • Alloy Steel ap (inch) .197 .157 .118 .079 .039 0 f (IPR) .004 .012 .020 Corner .010" 16° Flank .014" 16° CNMG432MH
		Standard 	**Alternative chipbreaker for medium cutting of carbon steel and alloy steel** Flat land offers high edge strength. Flat top chipbreaker shape offers high edge strength.	Carbon Steel • Alloy Steel ap (inch) .197 .157 .118 .079 .039 0 f (IPR) .004 .012 .020 Corner .010" 15° Flank .010" 15° CNMG432
		MW 	**Wiper insert for medium cutting of carbon steel, alloy steel, stainless steel and cast iron** The wiper allows up to two times higher feed. A wide chip pocket prevents chip jamming.	Carbon Steel • Alloy Steel ap (inch) .197 .157 .118 .079 .039 0 f (IPR) .004 .012 .020 Corner .010" 19° Flank .012" 19° CNMG432MW
		R/L-ES 	**Alternative chipbreaker for medium cutting of stainless steel** Good balance of edge strength and sharpness. Right- or left-hand chipbreaker for unidirectional chip control.	Stainless Steel ap (inch) .197 .157 .118 .079 .039 0 f (IPR) .004 .012 .020 Flank .006" 15° TNMG321RES
Rough Cutting	M	**RP** 	**First recommendation for rough cutting of carbon steel and alloy steel** For interrupted cuts and removing scale. Good balance of cutting edge strength and low cutting resistance because of suitable rake angle.	Carbon Steel • Alloy Steel ap (inch) .276 .197 .118 .039 0 f (IPR) .004 .012 .020 .028 Corner .013" 3° Flank .013" CNMG432RP
		GH 	**Alternative chipbreaker for rough cutting of carbon steel, alloy steel and cast iron** For interrupted cuts and removing scale. A combination of wide land and a large chip pocket allows high feed rates.	Carbon Steel • Alloy Steel ap (inch) .276 .197 .118 .039 0 f (IPR) .004 .012 .020 .028 Corner .013" 18° Flank .013" 18° CNMG432GH

Chipbreaker System for Steel Turning

Negative Inserts

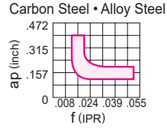
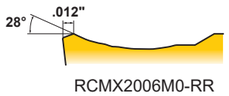
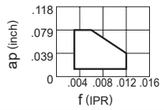
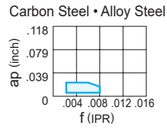
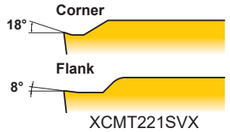
Application	Tolerance	Chipbreaker Name and Picture	Features	Cross Section Geometry
Heavy Cutting	M	**HX** 	**First recommendation for heavy cutting of carbon steel and alloy steel** Covers the medium range of the heavy cutting region. Owing to the straight edge and chamfer, it gives a balance of sharpness and strength. Variable land and a wavy chipbreaker for good chip control.	
		HL 	**First recommendation for heavy cutting** **Alternative chipbreaker for heavy cutting of carbon steel and alloy steel** Low resistance due to narrow flat land. Achieves high chip breaking ability.	
		HR 	**Alternative chipbreaker for heavy cutting of carbon steel and alloy steel** High cutting edge strength. Excellent chip discharge even with high feed and high depth of cut.	
		HV 	**Alternative chipbreaker for heavy cutting of carbon steel and alloy steel** Covers the upper end of the heavy cutting area. Wide land and large chamfer offer high edge strength. A wide chipbreaker prevents chip jamming.	
		HZ 	**Alternative chipbreaker for heavy cutting of carbon steel and alloy steel** Covers the lower end of the heavy cutting area. Low cutting resistance due to positive land and curved edge. Teardrop dots improve chip control without increasing cutting resistance.	
		HM 	**Alternative chipbreaker for heavy cutting of carbon steel and alloy steel and stainless steel** Flat land provides outstanding balance between cutting edge strength and sharpness.	

Positive Inserts

Application	Tolerance	Chipbreaker Name and Picture	Features	Cross Section Geometry
Finish Cutting	M	**FP** 	**First recommendation for finishing carbon steel, alloy steel and mild steel** Chipbreaker protrusion at the corner tip controls chips even at small depth of cut. Maintains the edge strength at the corner and prevents sudden fractures.	
		FV 	**Alternative chipbreaker for finishing carbon steel, alloy steel, mild steel and stainless steel** Suitable for low depths of cut and low feed rates. Sharp cutting edge and low resistance design achieves excellent cutting performance.	
Light Cutting	M	**LP** 	**First recommendation for light cutting of carbon steel, alloy steel and mild steel** Sharp cutting edge due to a large rake angle. Prevents welding of the insert and controls white turbidity of the surface finish. Chipbreaker protrusion suitable for depth of cut area achieves a wide range of chip control.	
		SW 	**Wiper insert for light cutting of carbon steel, alloy steel, mild steel and stainless steel** In comparison to conventional chipbreakers, the surface finish is maintained even if the feed per revolution is doubled. Positive land improves sharpness.	
Medium Cutting	M	**MP** 	**First recommendation for medium cutting of carbon steel, alloy steel and mild steel** Good balance of wear resistance and fracture resistance because of the flat land cutting edge. A wide chip pocket controls increasing of the cutting resistance and reduces vibration and chip jamming even at large depths of cut.	
		MV 	**Alternative chipbreaker for medium cutting of carbon steel, alloy steel, mild steel and stainless steel** A positive insert and the large rake angle achieve sharp cutting edge performance. The double chipbreaker and round shape in the rake face achieve a wide range of chip discharge.	
		MW 	**Wiper insert for medium cutting of carbon steel, alloy steel, mild steel and stainless steel** The wiper allows up to two times higher feed. A wide chip pocket prevents chip jamming.	
		Standard 	**Alternative chipbreaker for medium cutting of carbon steel, alloy steel and stainless steel** Standard, general purpose chipbreaker.	
		Standard 	**Alternative chipbreaker for medium cutting of carbon steel, alloy steel, mild steel, stainless steel and cast iron** Balance of edge strength and sharpness due to a combination of a flat land and large rake angle.	

Chipbreaker System for Steel Turning

Positive Inserts

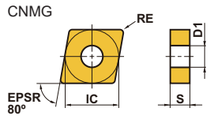
Application	Tolerance	Chipbreaker Name and Picture	Features	Cross Section Geometry
Heavy Cutting	M	RR 	**Chipbreaker for heavy cutting of carbon steel and alloy steel** A wide groove chipbreaker prevents chips from jamming at large depths of cut. Small dimples improve chip control at small depths of cut.	Carbon Steel • Alloy Steel   RCMX2006M0-RR
Strong Cutting Edge		Flat Top 	**Chipbreaker for Heavy cutting** Flat top. Most effective for unstable machining due to its high edge strength.	Cast Iron   SPMW120308
Finish Cutting		SVX 	**Alternative chipbreaker for light cutting of carbon steel and alloy steel** Chip control is improved by having a chipbreaker geometry suitable for copying.	Carbon Steel • Alloy Steel   XCMT221SVX

MC6100 Series

Negative Inserts (With Hole)

M Class

CNMG



Finish	Finish	Finish	Finish	Finish	Light
FPH	FP	FH	FS	FY	LP
					
Light	**Light**	**Light**	**Light**	**Medium**	**Medium**
SH	SA	SW	SY	MP	MS
					
		(Wiper)			

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
CNMG431FPH	F	●	●	●	.500	.187	.016	.203
CNMG432FPH	F	●	●	●	.500	.187	.031	.203
CNMG433FPH	F	●	●	●	.500	.187	.047	.203
CNMG430.5FP	F	●	●	●	.500	.187	.008	.203
CNMG431FP	F	●	●	★	.500	.187	.016	.203
CNMG432FP	F	●	●	●	.500	.187	.031	.203
CNMG433FP	F	★	★	★	.500	.187	.047	.203
CNMG430.5FH	F	●	●	●	.500	.187	.008	.203
CNMG431FH	F	★	●	★	.500	.187	.016	.203
CNMG432FH	F	●	●		.500	.187	.031	.203
CNMG431FS	F		★	★	.500	.187	.016	.203
CNMG431FY	F	★	★	★	.500	.187	.016	.203
CNMG432FY	F	★	★	●	.500	.187	.031	.203
CNMG431LP	L	●	●	●	.500	.187	.016	.203
CNMG432LP	L	●	●	●	.500	.187	.031	.203
CNMG433LP	L	●	●	★	.500	.187	.047	.203
CNMG32.51SH	L	★	★		.375	.156	.016	.150
CNMG32.52SH	L	★	★		.375	.156	.031	.150
CNMG431SH	L	●	●	★	.500	.187	.016	.203
CNMG432SH	L	●	●	●	.500	.187	.031	.203
CNMG433SH	L	●	●	★	.500	.187	.047	.203
CNMG431SA	L	●	●	●	.500	.187	.016	.203
CNMG432SA	L	●	●	●	.500	.187	.031	.203
CNMG433SA	L	●	●	★	.500	.187	.047	.203
CNMG431SW	L	●	●		.500	.187	.016	.203
CNMG432SW	L	●	●		.500	.187	.031	.203
CNMG433SW	L	●	●		.500	.187	.047	.203
CNMG431SY	L	★	★	★	.500	.187	.016	.203
CNMG432SY	L	★	★	★	.500	.187	.031	.203

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
CNMG431MP	M	●	●	●	.500	.187	.016	.203
CNMG432MP	M	●	●	●	.500	.187	.031	.203
CNMG433MP	M	●	●	●	.500	.187	.047	.203
CNMG434MP	M	●	●	●	.500	.187	.063	.203
CNMG542MP	M	●	●	●	.625	.250	.031	.250
CNMG543MP	M	●	●	●	.625	.250	.047	.250
CNMG544MP	M	●	●	★	.625	.250	.063	.250
CNMG322MS	M	●	●		.375	.125	.031	.150
CNMG32.52MS	M	★	★		.375	.156	.031	.150
CNMG431MS	M	●	★	★	.500	.187	.016	.203
CNMG432MS	M	●	●	★	.500	.187	.031	.203
CNMG433MS	M	●	●		.500	.187	.047	.203

● = NEW

● : USA Stock ★ : Stocked in Japan
(10 inserts in one case)

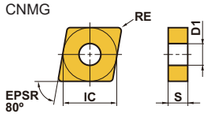
MC6100 Series

Negative Inserts (With Hole)

M Class

Medium	Medium	Medium	Medium	Rough	Rough
MA	MH	Standard	MW	RP	GH
					
			(Wiper)		

CNMG



(inch)

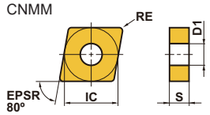
Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
CNMG431MA	M	●	●	●	.500	.187	.016	.203
CNMG432MA	M	●	●	●	.500	.187	.031	.203
CNMG433MA	M	●	●	●	.500	.187	.047	.203
CNMG434MA	M	●	●	★	.500	.187	.063	.203
CNMG542MA	M	●	●	●	.625	.250	.031	.250
CNMG543MA	M	●	●	●	.625	.250	.047	.250
CNMG544MA	M	●	●	★	.625	.250	.063	.250
CNMG643MA	M	●	●	●	.750	.250	.047	.312
CNMG644MA	M	●	●	●	.750	.250	.063	.312
CNMG431MH	M	●	●	●	.500	.187	.016	.203
CNMG432MH	M	●	●	●	.500	.187	.031	.203
CNMG433MH	M	●	●	●	.500	.187	.047	.203
CNMG434MH	M	●	●	★	.500	.187	.063	.203
CNMG542MH	M	●	●		.625	.250	.031	.250
CNMG543MH	M	●	●	●	.625	.250	.047	.250
CNMG544MH	M	●	●		.625	.250	.063	.250
CNMG643MH	M	●	●	●	.750	.250	.047	.312
CNMG644MH	M	●	●	★	.750	.250	.063	.312
CNMG322	M	★	★		.375	.125	.031	.150
CNMG32.51	M	★	★	★	.375	.156	.016	.150
CNMG32.52	M	★	★	★	.375	.156	.031	.150
CNMG431	M	●	●	●	.500	.187	.016	.203
CNMG432	M	●	●	●	.500	.187	.031	.203
CNMG433	M	●	●	●	.500	.187	.047	.203
CNMG434	M	●	●	★	.500	.187	.063	.203
CNMG542	M	●	●	★	.625	.250	.031	.250
CNMG543	M	●	●	●	.625	.250	.047	.250
CNMG544	M	●	●	★	.625	.250	.063	.250
CNMG642	M	●	●	●	.750	.250	.031	.312
CNMG643	M	●	●	●	.750	.250	.047	.312
CNMG644	M	●	●	★	.750	.250	.063	.312
CNMG432MW	M	●	●	●	.500	.187	.031	.203
CNMG433MW	M	●	●	★	.500	.187	.047	.203

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
CNMG432RP	R	●	●	●	.500	.187	.031	.203
CNMG433RP	R	●	●	●	.500	.187	.047	.203
CNMG434RP	R	●	●	●	.500	.187	.063	.203
CNMG543RP	R	●	●	●	.625	.250	.047	.250
CNMG544RP	R	●	●	★	.625	.250	.063	.250
CNMG643RP	R	●	●	●	.750	.250	.047	.312
CNMG644RP	R	●	●	●	.750	.250	.063	.312
CNMG432GH	R	●	●	●	.500	.187	.031	.203
CNMG433GH	R	●	●	●	.500	.187	.047	.203
CNMG434GH	R	●	●		.500	.187	.063	.203
CNMG543GH	R	●	●	●	.625	.250	.047	.250
CNMG544GH	R	●	●		.625	.250	.063	.250
CNMG643GH	R	●	●	●	.750	.250	.047	.312
CNMG644GH	R	●	●	★	.750	.250	.063	.312

● : USA Stock ★ : Stocked in Japan
(10 inserts in one case)

Heavy	Heavy	Heavy	Heavy	Heavy	Heavy
HX	HL	HR	HV	HZ	HM
					

CNMM



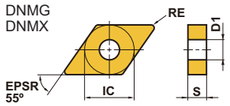
(inch)

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
CNMM432HX	H		●	●	.500	.187	.031	.203
CNMM433HX	H		★	★	.500	.187	.047	.203
CNMM543HX	H		★	★	.625	.250	.047	.250
CNMM544HX	H		★	★	.625	.250	.063	.250
CNMM643HX	H	★	★	★	.750	.250	.047	.312
CNMM644HX	H	★	★	★	.750	.250	.063	.312
CNMM646HX	H	★	★	★	.750	.250	.094	.312
CNMM866HX	H	★	★	★	1.000	.375	.094	.359
CNMM432HL	H		★	★	.500	.187	.031	.203
CNMM433HL	H		★	★	.500	.187	.047	.203
CNMM434HL	H			★	.500	.187	.063	.203
CNMM543HL	H		★	★	.625	.250	.047	.250
CNMM544HL	H		★	★	.625	.250	.063	.250
CNMM643HL	H		★	★	.750	.250	.047	.312
CNMM644HL	H		★	★	.750	.250	.063	.312
CNMM646HL	H		●	★	.750	.250	.094	.312
CNMM866HR	H	★	★	●	1.000	.375	.094	.359
CNMM644HV	H	★	★	★	.750	.250	.063	.312
CNMM646HV	H	★	★	★	.750	.250	.094	.312
CNMM866HV	H	★	★	●	1.000	.375	.094	.359
CNMM432HZ	H	★	★	★	.500	.187	.031	.203
CNMM433HZ	H	★	★	★	.500	.187	.047	.203
CNMM434HZ	H			★	.500	.187	.063	.203
CNMM543HZ	H	★	★	★	.625	.250	.047	.250
CNMM544HZ	H	★	★	★	.625	.250	.063	.250
CNMM643HZ	H	★	★	★	.750	.250	.047	.312
CNMM644HZ	H	★	★	★	.750	.250	.063	.312
CNMM543HM	H		★	★	.625	.250	.047	.250
CNMM544HM	H		★	★	.625	.250	.063	.250
CNMM643HM	H		★	★	.750	.250	.047	.312
CNMM644HM	H		★	★	.750	.250	.063	.312
CNMM646HM	H		●	★	.750	.250	.094	.312
CNMM866HM	H	★	★	★	1.000	.375	.094	.359

MC6100 Series

Negative Inserts (With Hole)

M Class



Finish	Finish	Finish	Finish	Finish	Light
FPH	FP	FH	FS	FY	LP
					
Light	**Light**	**Light**	**Light**	**Medium**	**Medium**
SH	SA	SW	SY	MP	MS
		 (Wiper)			

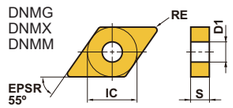
(inch)

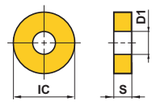
Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
DNMG431FPH	F	●	●	●	.500	.187	.016	.203
DNMG432FPH	F	●	●	●	.500	.187	.031	.203
DNMG433FPH	F	●	●	●	.500	.187	.047	.203
DNMG441FPH	F	●	●	●	.500	.250	.016	.203
DNMG442FPH	F	●	●	●	.500	.250	.031	.203
DNMG443FPH	F	●	●	●	.500	.250	.047	.203
DNMG430.5FP	F	●	●	●	.500	.187	.008	.203
DNMG431FP	F	●	●	★	.500	.187	.016	.203
DNMG432FP	F	●	●	●	.500	.187	.031	.203
DNMG433FP	F	●	★	★	.500	.187	.047	.203
DNMG440.5FP	F	★	★	★	.500	.250	.008	.203
DNMG441FP	F	★	★	★	.500	.250	.016	.203
DNMG442FP	F	★	★	★	.500	.250	.031	.203
DNMG443FP	F	★	★	★	.500	.250	.047	.203
DNMG430.5FH	F	●	●	★	.500	.187	.008	.203
DNMG431FH	F	●	●		.500	.187	.016	.203
DNMG432FH	F	●	●		.500	.187	.031	.203
DNMG440.5FH	F	★	★	★	.500	.250	.008	.203
DNMG441FH	F	★	★	★	.500	.250	.016	.203
DNMG442FH	F	★	★	★	.500	.250	.031	.203
DNMG432FS	F		★	★	.500	.187	.031	.203
DNMG431FY	F	★	★	★	.500	.187	.016	.203
DNMG432FY	F	★	●	●	.500	.187	.031	.203
DNMG442FY	F	★	★	★	.500	.250	.031	.203
DNMG331LP	L	●	●	★	.375	.187	.016	.150
DNMG332LP	L	●	●	●	.375	.187	.031	.150
DNMG431LP	L	●	●	●	.500	.187	.016	.203
DNMG432LP	L	●	●	●	.500	.187	.031	.203
DNMG433LP	L	●	●	●	.500	.187	.047	.203
DNMG441LP	L	●	●	★	.500	.250	.016	.203
DNMG442LP	L	●	●	★	.500	.250	.031	.203
DNMG443LP	L	●	●	★	.500	.250	.047	.203
DNMG331SH	L	★	★		.375	.187	.016	.150
DNMG332SH	L	●	●		.375	.187	.031	.150
DNMG431SH	L	●	●	★	.500	.187	.016	.203
DNMG432SH	L	●	●	★	.500	.187	.031	.203
DNMG433SH	L	●	●	★	.500	.187	.047	.203
DNMG441SH	L	●	●		.500	.250	.016	.203
DNMG442SH	L	●	●		.500	.250	.031	.203
DNMG443SH	L	●	●		.500	.250	.047	.203

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
DNMG431SA	L	●	●	●	.500	.187	.016	.203
DNMG432SA	L	●	●	●	.500	.187	.031	.203
DNMG433SA	L	●	●	★	.500	.187	.047	.203
DNMG441SA	L	●	●	★	.500	.250	.016	.203
DNMG442SA	L	●	●	★	.500	.250	.031	.203
DNMG443SA	L	●	●	★	.500	.250	.047	.203
DNMX331SW	L	●	★		.375	.187	.016	.150
DNMX332SW	L	●	★		.375	.187	.031	.150
DNMX431SW	L	●	★		.500	.187	.016	.203
DNMX432SW	L	●	●		.500	.187	.031	.203
DNMX433SW	L	●	★		.500	.187	.047	.203
DNMX441SW	L	★	★		.500	.250	.016	.203
DNMX442SW	L	★	★		.500	.250	.031	.203
DNMX443SW	L	★	★		.500	.250	.047	.203
DNMG431SY	L	★	★	★	.500	.187	.016	.203
DNMG432SY	L	★	★	★	.500	.187	.031	.203
DNMG442SY	L	★	★	★	.500	.250	.031	.203
DNMG431MP	M	●	●	●	.500	.187	.016	.203
DNMG432MP	M	●	●	●	.500	.187	.031	.203
DNMG433MP	M	●	●	●	.500	.187	.047	.203
DNMG434MP	M	●	●	★	.500	.187	.063	.203
DNMG441MP	M	●	●	★	.500	.250	.016	.203
DNMG442MP	M	●	●	★	.500	.250	.031	.203
DNMG443MP	M	●	●	★	.500	.250	.047	.203
DNMG444MP	M	●	●	★	.500	.250	.063	.203
DNMG332MS	M	●	●		.375	.187	.031	.150
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

● = NEW

● : USA Stock ★ : Stocked in Japan
(10 inserts in one case)





Medium	Medium	Medium	Medium	Rough
MA	MH	Standard	MW	RP
			 (Wiper)	
Rough	**Heavy**	**Heavy**		**Medium**
GH	HL	HZ		Standard
				

(inch)

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
DNMG331MA	M	●	●	★	.375	.187	.016	.150
DNMG332MA	M	●	●	●	.375	.187	.031	.150
DNMG333MA	M	★	★	★	.375	.187	.047	.150
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
DNMG444MA		★	★		.500	.250	.063	.203
DNMG431MH	M	●	●	●	.500	.187	.016	.203
DNMG432MH	M	●	●	●	.500	.187	.031	.203
DNMG433MH	M	●	●	●	.500	.187	.047	.203
DNMG441MH	M	●	●		.500	.250	.016	.203
DNMG442MH	M	●	●	★	.500	.250	.031	.203
DNMG443MH	M	●	●	★	.500	.250	.047	.203
DNMG332	M	★	★		.375	.187	.031	.150
DNMG431	M	●	●	★	.500	.187	.016	.203
DNMG432	M	●	●	●	.500	.187	.031	.203
DNMG433	M	●	●	★	.500	.187	.047	.203
DNMG434	M	●	●	★	.500	.187	.063	.203
DNMG441	M	●	●	★	.500	.250	.016	.203
DNMG442	M	●	●	★	.500	.250	.031	.203
DNMG443	M	●	●	★	.500	.250	.047	.203
DNMG444	M	★	★	★	.500	.250	.063	.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
DNMG432RP	R	●	●	●	.500	.187	.031	.203
DNMG433RP	R	●	●	●	.500	.187	.047	.203
DNMG434RP	R	●	●	●	.500	.187	.063	.203
DNMG442RP	R	●	●	★	.500	.250	.031	.203
DNMG443RP	R	●	●	★	.500	.250	.047	.203
DNMG444RP	R	●	●	★	.500	.250	.063	.203
DNMG432GH	R	●	●	★	.500	.187	.031	.203
DNMG433GH	R	●	●	★	.500	.187	.047	.203
DNMG442GH	R	●	●	★	.500	.250	.031	.203
DNMG443GH	R	●	●	★	.500	.250	.047	.203

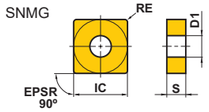
Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
DNMM432HL	H		★	★	.500	.187	.031	.203
DNMM433HL	H		★	★	.500	.187	.047	.203
DNMM442HL	H		★	★	.500	.250	.031	.203
DNMM443HL	H		★	★	.500	.250	.047	.203
DNMM432HZ	H	★	★	★	.500	.187	.031	.203
DNMM433HZ	H	★	★	★	.500	.187	.047	.203
DNMM442HZ	H	★	★	★	.500	.250	.031	.203
DNMM443HZ	H	★	★	★	.500	.250	.047	.203

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
RNMG43	M	●	●	★	.472	.187	-	.203

MC6100 Series

Negative Inserts (With Hole)

M Class



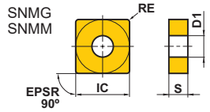
Finish	Finish	Light	Light	Light	Light
FP	FH	LP	SH	SA	SY
Medium	Medium	Medium	Medium	Medium	
MP	MS	MA	MH	Standard	

(inch)

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
SNMG431FP	F	★	★	★	.500	.187	.016	.203
SNMG432FP	F	★	★	★	.500	.187	.031	.203
SNMG433FP	F	★	★	★	.500	.187	.047	.203
SNMG431FH	F	★	★		.500	.187	.016	.203
SNMG432FH	F	★	★		.500	.187	.031	.203
SNMG431LP	L	●	●	★	.500	.187	.016	.203
SNMG432LP	L	●	●	●	.500	.187	.031	.203
SNMG433LP	L	●	●	★	.500	.187	.047	.203
SNMG431SH	L	★	★		.500	.187	.016	.203
SNMG432SH	L	●	●	●	.500	.187	.031	.203
SNMG433SH	L	★	★	★	.500	.187	.047	.203
SNMG431SA	L	★	★		.500	.187	.016	.203
SNMG432SA	L	●	●	★	.500	.187	.031	.203
SNMG433SA	L	★	★	●	.500	.187	.047	.203
SNMG432SY	L	★	★	★	.500	.187	.031	.203
SNMG431MP	M	●	●	★	.500	.187	.016	.203
SNMG432MP	M	●	●	★	.500	.187	.031	.203
SNMG433MP	M	●	●	●	.500	.187	.047	.203
SNMG431MS	M	★	★		.500	.187	.016	.203
SNMG432MS	M	★	★	★	.500	.187	.031	.203
SNMG433MS	M	★	★		.500	.187	.047	.203
SNMG431MA	M	●	●	★	.500	.187	.016	.203
SNMG432MA	M	●	●	●	.500	.187	.031	.203
SNMG433MA	M	●	●	●	.500	.187	.047	.203
SNMG542MA	M	●	●	★	.625	.250	.031	.250
SNMG543MA	M	●	●	●	.625	.250	.047	.250
SNMG544MA	M	●	●	★	.625	.250	.063	.250
SNMG643MA	M	●	●	★	.750	.250	.047	.312
SNMG644MA	M	●	●	●	.750	.250	.063	.312
SNMG432MH	M	●	●	●	.500	.187	.031	.203
SNMG433MH	M	●	●	●	.500	.187	.047	.203
SNMG643MH	M	●	●	●	.750	.250	.047	.312
SNMG644MH	M	●	●	●	.750	.250	.063	.312

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
SNMG321	M	★	★	★	.375	.125	.016	.150
SNMG322	M	●	●	★	.375	.125	.031	.150
SNMG431	M	●	●	★	.500	.187	.016	.203
SNMG432	M	●	●	●	.500	.187	.031	.203
SNMG433	M	●	●	★	.500	.187	.047	.203
SNMG434	M	●	★	★	.500	.187	.063	.203
SNMG435	M	★	★	★	.500	.187	.079	.203
SNMG543	M	●	●	●	.625	.250	.047	.250
SNMG544	M	★	●	●	.625	.250	.063	.250
SNMG643	M	●	●	●	.750	.250	.047	.312
SNMG644	M	●	●	●	.750	.250	.063	.312

● : USA Stock ★ : Stocked in Japan
(10 inserts in one case)



Rough	Rough				
RP	GH				
Heavy	Heavy	Heavy	Heavy	Heavy	Heavy
HX	HL	HR	HV	HZ	HM

(inch)

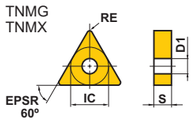
Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
SNMG432RP	R	●	●	★	.500	.187	.031	.203
SNMG433RP	R	●	●	●	.500	.187	.047	.203
SNMG434RP	R	●	●	●	.500	.187	.063	.203
SNMG543RP	R	●	●	●	.625	.250	.047	.250
SNMG544RP	R	●	●	●	.625	.250	.063	.250
SNMG643RP	R	●	●	●	.750	.250	.047	.312
SNMG644RP	R	●	●	●	.750	.250	.063	.312
SNMG432GH	R	●	●	★	.500	.187	.031	.203
SNMG433GH	R	●	●	★	.500	.187	.047	.203
SNMG434GH	R	●	●		.500	.187	.063	.203
SNMG543GH	R	●	●		.625	.250	.047	.250
SNMG544GH	R	★	★		.625	.250	.063	.250
SNMG643GH	R	●	●		.750	.250	.047	.312
SNMG644GH	R	●	●		.750	.250	.063	.312
SNMM432HX	H		★	★	.500	.187	.031	.203
SNMM433HX	H		★	★	.500	.187	.047	.203
SNMM543HX	H		★	★	.625	.250	.047	.250
SNMM643HX	H	★	★	★	.750	.250	.047	.312
SNMM644HX	H	★	★	★	.750	.250	.063	.312
SNMM646HX	H	★	★	★	.750	.250	.094	.312
SNMM856HX	H	★	★	★	1.000	.313	.094	.359
SNMM866HX	H	★	★	★	1.000	.375	.094	.359
SNMM432HL	H		★	★	.500	.187	.031	.203
SNMM433HL	H		★	★	.500	.187	.047	.203
SNMM543HL	H		★	★	.625	.250	.047	.250
SNMM643HL	H		★	★	.750	.250	.047	.312
SNMM644HL	H		★	★	.750	.250	.063	.312
SNMM646HL	H		★	★	.750	.250	.094	.312
SNMM856HR	H	★	★	●	1.000	.313	.094	.359
SNMM866HR	H	★	★	★	1.000	.375	.094	.359
SNMM644HV	H	★	★	★	.750	.250	.063	.312
SNMM646HV	H	★	★	★	.750	.250	.094	.312
SNMM856HV	H	★	★	★	1.000	.313	.094	.359
SNMM866HV	H	★	●	●	1.000	.375	.094	.359

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
SNMM432HZ	H	★	★	★	.500	.187	.031	.203
SNMM433HZ	H	★	★	★	.500	.187	.047	.203
SNMM543HZ	H	★	★	★	.625	.250	.047	.250
SNMM643HZ	H	★	★	★	.750	.250	.047	.312
SNMM644HZ	H	★	★	★	.750	.250	.063	.312
SNMM543HM	H		★	★	.625	.250	.047	.250
SNMM643HM	H		★	★	.750	.250	.047	.312
SNMM644HM	H		★	★	.750	.250	.063	.312
SNMM646HM	H		★	★	.750	.250	.094	.312
SNMM856HM	H	★	★	★	1.000	.313	.094	.359
SNMM866HM	H	★	★	★	1.000	.375	.094	.359

MC6100 Series

Negative Inserts (With Hole)

M Class



Finish	Finish	Finish	Finish	Finish	Light
FPH	FP	FH	FS	FY	LP
Light	Light	Light	Light	Medium	Medium
SH	SA	SW	SY	MP	MS
		(Wiper)			

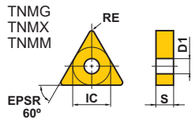
(inch)

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
TNMG331FPH	F	●	●	●	.375	.187	.016	.150
TNMG332FPH	F	●	●	●	.375	.187	.031	.150
TNMG333FPH	F	●	●	●	.375	.187	.047	.150
TNMG330.5FP	F	★	★	★	.375	.187	.008	.150
TNMG331FP	F	★	★	★	.375	.187	.016	.150
TNMG332FP	F	●	★	★	.375	.187	.031	.150
TNMG333FP	F	★	★	★	.375	.187	.047	.150
TNMG330.5FH	F	★	★	★	.375	.187	.008	.150
TNMG331FH	F	★	★		.375	.187	.016	.150
TNMG332FH	F	★	★	★	.375	.187	.031	.150
TNMG331FS	F		★	★	.375	.187	.016	.150
TNMG332FS	F		★	★	.375	.187	.031	.150
TNMG331FY	F	★	★	★	.375	.187	.016	.150
TNMG332FY	F	★	★	★	.375	.187	.031	.150
TNMG331LP	L	●	●	●	.375	.187	.016	.150
TNMG332LP	L	●	●	●	.375	.187	.031	.150
TNMG333LP	L	●	●	★	.375	.187	.047	.150
TNMG432LP	L	●	●	★	.500	.187	.031	.203
TNMG433LP	L	●	●	★	.500	.187	.047	.203
TNMG331SH	L	●	●	★	.375	.187	.016	.150
TNMG332SH	L	●	●	★	.375	.187	.031	.150
TNMG432SH	L	●	●		.500	.187	.031	.203
TNMG331SA	L	●	●	★	.375	.187	.016	.150
TNMG332SA	L	●	●	●	.375	.187	.031	.150
TNMG333SA	L	●	●	★	.375	.187	.047	.150
TNMG432SA	L	●	●	●	.500	.187	.031	.203
TNMG433SA	L	●	●		.500	.187	.047	.203
TNMX331SW	L	●	★		.375	.187	.016	.150
TNMX332SW	L	●	●		.375	.187	.031	.150
TNMG331SY	L	★	★	★	.375	.187	.016	.150
TNMG332SY	L	★	★	★	.375	.187	.031	.150

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
TNMG331MP	M	●	●	★	.375	.187	.016	.150
TNMG332MP	M	●	●	★	.375	.187	.031	.150
TNMG333MP	M	●	●	★	.375	.187	.047	.150
TNMG432MP	M	●	●	●	.500	.187	.031	.203
TNMG433MP	M	●	●	●	.500	.187	.047	.203
TNMG331MS	M	★	★		.375	.187	.016	.150
TNMG332MS	M	●	★	★	.375	.187	.031	.150
TNMG333MS	M	★	★		.375	.187	.047	.150
TNMG432MS	M	●	★		.500	.187	.031	.203

● = NEW

● : USA Stock ★ : Stocked in Japan
(10 inserts in one case)



Medium	Medium	Medium	Medium	Medium
MA	MH	Standard	MW	ES
			(Wiper)	
Rough	Rough	Heavy	Heavy	
RP	GH	HL	HZ	

(inch)

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
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
TNMG542MA	M	●	●	●	.625	.250	.031	.250
TNMG543MA	M	●	●	●	.625	.250	.047	.250
TNMG331MH	M	●	●	★	.375	.187	.016	.150
TNMG332MH	M	●	●	●	.375	.187	.031	.150
TNMG333MH	M	●	●	★	.375	.187	.047	.150
TNMG432MH	M	●	●	●	.500	.187	.031	.203
TNMG433MH	M	●	●	●	.500	.187	.047	.203
TNMG221	M	★	★	★	.250	.125	.016	.089
TNMG222	M	●	●	★	.250	.125	.031	.089
TNMG321	M	●	●	●	.375	.125	.016	.150
TNMG322	M	●	●	●	.375	.125	.031	.150
TNMG331	M	●	●	★	.375	.187	.016	.150
TNMG332	M	●	●	●	.375	.187	.031	.150
TNMG333	M	●	●	★	.375	.187	.047	.150
TNMG334	M	●	★	★	.375	.187	.063	.150
TNMG431	M	●	●	●	.500	.187	.016	.203
TNMG432	M	●	●	●	.500	.187	.031	.203
TNMG433	M	●	●	●	.500	.187	.047	.203
TNMG434	M	●	●	●	.500	.187	.063	.203
TNMG542	M	●	★	●	.625	.250	.031	.250
TNMG543	M	★	●	●	.625	.250	.047	.250
TNMG544	M	●	●	★	.625	.250	.063	.250
TNMX332MW	M	★	★		.375	.187	.031	.150
TNMX333MW	M	●	★		.375	.187	.047	.150
TNMG331RES	M	★	★		.375	.187	.016	.150
TNMG331LES	M	★	★		.375	.187	.016	.150
TNMG332RES	M	★	★		.375	.187	.031	.150
TNMG332LES	M	★	★		.375	.187	.031	.150
TNMG432RES	M	★	★		.500	.187	.031	.203
TNMG432LES	M	★	★		.500	.187	.031	.203

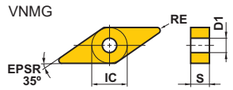
Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
TNMG332RP	R	●	●	★	.375	.187	.031	.150
TNMG333RP	R	●	●	★	.375	.187	.047	.150
TNMG432RP	R	●	●	●	.500	.187	.031	.203
TNMG433RP	R	●	●	●	.500	.187	.047	.203
TNMG434RP	R	●	●	●	.500	.187	.063	.203
TNMG543RP	R	●	●	●	.625	.250	.047	.250
TNMG544RP	R	●	●	●	.625	.250	.063	.250
TNMG332GH	R	●	●	★	.375	.187	.031	.150
TNMG333GH	R	●	●		.375	.187	.047	.150
TNMG432GH	R	●	●	★	.500	.187	.031	.203
TNMG433GH	R	●	●	★	.500	.187	.047	.203
TNMG434GH	R	●	●		.500	.187	.063	.203
TNMG543GH	R	●	●	●	.625	.250	.047	.250
TNMG544GH	R	●	●		.625	.250	.063	.250
TNMM332HL	H		●	★	.375	.187	.031	.150
TNMM333HL	H		★	★	.375	.187	.047	.150
TNMM432HL	H		★	★	.500	.187	.031	.203
TNMM433HL	H		★	★	.500	.187	.047	.203
TNMM434HL	H		★	★	.500	.187	.063	.203
TNMM332HZ	H	★	★	★	.375	.187	.031	.150
TNMM333HZ	H		★	★	.375	.187	.047	.150
TNMM432HZ	H	★	★	★	.500	.187	.031	.203
TNMM433HZ	H	★	★	★	.500	.187	.047	.203
TNMM434HZ	H	★	★	★	.500	.187	.063	.203

MC6100 Series

Negative Inserts (With Hole)

M Class

VNMG



Finish	Finish	Finish	Finish	Light	Light
FPH	FP	FH	FS	LP	SH
Light	Medium	Medium	Medium	Medium	Medium
SA	MP	MS	MA	MH	Standard

(inch)

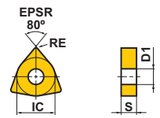
Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
VNMG331FPH	F	●	●	●	.375	.187	.016	.150
VNMG332FPH	F	●	●	●	.375	.187	.031	.150
VNMG333FPH	F	●	●	●	.375	.187	.047	.150
VNMG330.5FP	F	●	●	●	.375	.187	.008	.150
VNMG331FP	F	●	●	★	.375	.187	.016	.150
VNMG332FP	F	●	●	●	.375	.187	.031	.150
VNMG333FP	F	★	★	★	.375	.187	.047	.150
VNMG330.5FH	F	●	●	●	.375	.187	.008	.150
VNMG331FH	F	★	●	★	.375	.187	.016	.150
VNMG332FH	F	●	●	★	.375	.187	.031	.150
VNMG331FS	F		★	★	.375	.187	.016	.150
VNMG332FS	F		●	●	.375	.187	.031	.150
VNMG331LP	L	●	●	●	.375	.187	.016	.150
VNMG332LP	L	●	●	●	.375	.187	.031	.150
VNMG331SH	L	●	●	★	.375	.187	.016	.150
VNMG332SH	L	●	●	●	.375	.187	.031	.150
VNMG331SA	L	●	★	★	.375	.187	.016	.150
VNMG332SA	L	●	●	●	.375	.187	.031	.150

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
VNMG331MP	M	●	●	●	.375	.187	.016	.150
VNMG332MP	M	●	●	●	.375	.187	.031	.150
VNMG333MP	M	●	●	●	.375	.187	.047	.150
VNMG331MS	M	●	●		.375	.187	.016	.150
VNMG332MS	M	●	●		.375	.187	.031	.150
VNMG331MA	M	●	●	●	.375	.187	.016	.150
VNMG332MA	M	●	●	●	.375	.187	.031	.150
VNMG331MH	M	●	●	●	.375	.187	.016	.150
VNMG332MH	M	●	●	●	.375	.187	.031	.150
VNMG331	M	●	●	★	.375	.187	.016	.150
VNMG332	M	●	●	●	.375	.187	.031	.150
VNMG333	M	●	●	★	.375	.187	.047	.150

● = NEW

● : USA Stock ★ : Stocked in Japan
(10 inserts in one case)

WNMG



Finish	Finish	Finish	Finish	Finish	Light
FPH	FP	FH	FS	FY	LP
Light	Light	Light	Light		
SH	SA	SW	SY		

(Wiper)

(inch)

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
WNMG431FPH	F	●	●	●	.500	.187	.016	.203
WNMG432FPH	F	●	●	●	.500	.187	.031	.203
WNMG433FPH	F	●	●	●	.500	.187	.047	.203
WNMG430.5FP	F	●	★	★	.500	.187	.008	.203
WNMG431FP	F	★	★	★	.500	.187	.016	.203
WNMG432FP	F	●	★	★	.500	.187	.031	.203
WNMG433FP	F	★	★	★	.500	.187	.047	.203
WNMG431FH	F	★	●		.500	.187	.016	.203
WNMG432FH	F	★	★		.500	.187	.031	.203
WNMG431FS	F		★	★	.500	.187	.016	.203
WNMG432FS	F		●	●	.500	.187	.031	.203
WNMG432FY	F	★	★	★	.500	.187	.031	.203
WNMG32.51LP	L	★	★	★	.375	.156	.016	.150
WNMG32.52LP	L	★	★	★	.375	.156	.031	.150
WNMG331LP	L	●	●	★	.375	.187	.016	.150
WNMG332LP	L	●	★	★	.375	.187	.031	.150
WNMG431LP	L	●	●	●	.500	.187	.016	.203
WNMG432LP	L	●	●	●	.500	.187	.031	.203
WNMG433LP	L	●	●	●	.500	.187	.047	.203
WNMG32.51SH	L	★	★		.375	.156	.016	.150
WNMG32.52SH	L	★	★		.375	.156	.031	.150
WNMG331SH	L	●	★		.375	.187	.016	.150
WNMG332SH	L	★	★		.375	.187	.031	.150
WNMG431SH	L	●	●	★	.500	.187	.016	.203
WNMG432SH	L	●	●	●	.500	.187	.031	.203
WNMG433SH	L	●	●	★	.500	.187	.047	.203

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
WNMG431SA	L	●	●	★	.500	.187	.016	.203
WNMG432SA	L	●	●	●	.500	.187	.031	.203
WNMG433SA	L	●	●	★	.500	.187	.047	.203
WNMG331SW	L	●	★		.375	.187	.016	.150
WNMG332SW	L	●	★		.375	.187	.031	.150
WNMG431SW	L	●	●		.500	.187	.016	.203
WNMG432SW	L	●	●		.500	.187	.031	.203
WNMG433SW	L	●	●		.500	.187	.047	.203
WNMG432SY	L	★	★	★	.500	.187	.031	.203

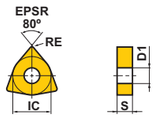
● = NEW

MC6100 Series

Negative Inserts (With Hole)

M Class

WNMG



Medium	Medium	Medium	Medium	Medium	Medium
MP	MS	MA	MH	Standard	MW
					(Wiper)
Rough	**Rough**				
RP	GH				

(inch)

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
WNMG32.51MP	M	★	●	●	.375	.156	.016	.150
WNMG32.52MP	M	★	●	●	.375	.156	.031	.150
WNMG32.53MP	M	★	★	★	.375	.156	.047	.150
WNMG331MP	M	★	●	★	.375	.187	.016	.150
WNMG332MP	M	●	●	●	.375	.187	.031	.150
WNMG333MP	M	★	●	●	.375	.187	.047	.150
WNMG431MP	M	●	●	●	.500	.187	.016	.203
WNMG432MP	M	●	●	●	.500	.187	.031	.203
WNMG433MP	M	●	●	●	.500	.187	.047	.203
WNMG434MP	M	●	●	●	.500	.187	.063	.203
WNMG32.51MS	M	★	★		.375	.156	.016	.150
WNMG32.52MS	M	★	★		.375	.156	.031	.150
WNMG331MS	M	★	★		.375	.187	.016	.150
WNMG332MS	M	★	★		.375	.187	.031	.150
WNMG431MS	M	★	★	★	.500	.187	.016	.203
WNMG432MS	M	★	★	★	.500	.187	.031	.203
WNMG433MS	M	★	★		.500	.187	.047	.203
WNMG32.51MA	M	★	★		.375	.156	.016	.150
WNMG32.52MA	M	★	★		.375	.156	.031	.150
WNMG32.53MA	M	★	★		.375	.156	.047	.150
WNMG331MA	M	●	●	●	.375	.187	.016	.150
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
WNMG434MA	M	●	●		.500	.187	.063	.203
WNMG543MA	M		●	●	.625	.250	.047	.250
WNMG431MH	M	●	●	●	.500	.187	.016	.203
WNMG432MH	M	●	●	●	.500	.187	.031	.203
WNMG433MH	M	●	●	●	.500	.187	.047	.203
WNMG431	M	●	●	●	.500	.187	.016	.203
WNMG432	M	●	●	●	.500	.187	.031	.203
WNMG433	M	●	●	★	.500	.187	.047	.203

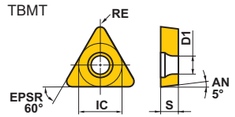
Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
WNMG332MW	M	●	●	★	.375	.187	.031	.150
WNMG333MW	M	★	★	★	.375	.187	.047	.150
WNMG432MW	M	●	●	●	.500	.187	.031	.203
WNMG433MW	M	●	●	★	.500	.187	.047	.203
WNMG432RP	R	●	●	●	.500	.187	.031	.203
WNMG433RP	R	●	●	●	.500	.187	.047	.203
WNMG434RP	R	★	★		.500	.187	.063	.203
WNMG432GH	R	●	●	★	.500	.187	.031	.203
WNMG433GH	R	●	●	●	.500	.187	.047	.203

● : USA Stock ★ : Stocked in Japan
(10 inserts in one case)

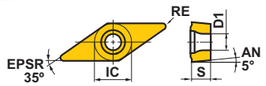
5° Positive Inserts (With Hole)

M Class

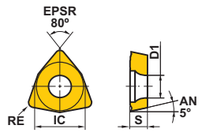
TBMT



VBMT



WBMT



Finish	Finish	Light	Medium	Medium
FP	FV	LP	MP	MV
Finish		**Medium**		
FV		MV		

(inch)

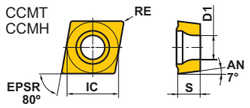
Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
TBMT1.210.5FV	F	●		●	.156	.063	.008	.091
TBMT1.211FV	F	●		●	.156	.063	.016	.091
VBMT220.5FP	F	●	●	●	.250	.125	.008	.114
VBMT221FP	F	●	★	●	.250	.125	.016	.114
VBMT222FP	F	●	★	●	.250	.125	.031	.114
VBMT331FP	F	●	★	●	.375	.187	.016	.173
VBMT332FP	F	★	★	★	.375	.187	.031	.173
VBMT333FP	F	●	●	●	.375	.187	.047	.173
VBMT221FV	F	●	★	★	.250	.125	.016	.114
VBMT222FV	F		●	★	.250	.125	.031	.114
VBMT331FV	F	●	●	★	.375	.187	.016	.173
VBMT332FV	F	●	●	★	.375	.187	.031	.173
VBMT221LP	L	●	●	★	.250	.125	.016	.114
VBMT222LP	L	●	●	●	.250	.125	.031	.114
VBMT331LP	L	●	●	★	.375	.187	.016	.173
VBMT332LP	L	●	●	●	.375	.187	.031	.173
VBMT333LP	L	●	●	●	.375	.187	.047	.173
VBMT331MP	M	●	★	●	.375	.187	.016	.173
VBMT332MP	M	●	●	●	.375	.187	.031	.173
VBMT221MV	M		●	●	.250	.125	.016	.114
VBMT222MV	M		●	●	.250	.125	.031	.114
VBMT331MV	M		★	●	.375	.187	.016	.173
VBMT332MV	M		●	●	.375	.187	.031	.173

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
WBMT1.51.50.5RMV	M		★	★	.187	.094	.008	.091
WBMT1.51.50.5LMV	M		★	★	.187	.094	.008	.091
WBMT1.51.51RMV	M		★	★	.187	.094	.016	.091
WBMT1.51.51LMV	M		★	★	.187	.094	.016	.091

MC6100 Series

7° Positive Inserts (With Hole)

M Class



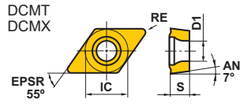
Finish	Finish	Light	Light
FP	FV	LP	SW
			 (Wiper)
Medium	**Medium**	**Medium**	
MP	MV	MW	
		 (Wiper)	

(inch)

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
CCMT21.50.5FP	F	●	●	●	.250	.094	.008	.110
CCMT21.51FP	F	●	●	●	.250	.094	.016	.110
CCMT32.50.5FP	F	●	●	●	.375	.156	.008	.173
CCMT32.51FP	F	●	●	●	.375	.156	.016	.173
CCMT32.52FP	F	●	●	●	.375	.156	.031	.173
CCMT21.50.5FV	F		●	●	.250	.094	.008	.110
CCMT21.51FV	F		●	●	.250	.094	.016	.110
CCMT32.50.5FV	F		★	★	.375	.156	.008	.173
CCMT32.51FV	F		●	●	.375	.156	.016	.173
CCMT32.52FV	F		●	●	.375	.156	.031	.173
CCMT21.50.5LP	L	●	★	★	.250	.094	.008	.110
CCMT21.51LP	L	●	●	●	.250	.094	.016	.110
CCMT21.52LP	L	●	●	★	.250	.094	.031	.110
CCMT32.50.5LP	L	●	●	●	.375	.156	.008	.173
CCMT32.51LP	L	●	●	●	.375	.156	.016	.173
CCMT32.52LP	L	●	●	●	.375	.156	.031	.173
CCMT21.50.5SW	L	●	★	★	.250	.094	.008	.110
CCMT21.51SW	L	★	★	★	.250	.094	.016	.110
CCMT21.52SW	L	●	●	●	.250	.094	.031	.110
CCMT32.50.5SW	L	●	●	●	.375	.156	.008	.173
CCMT32.51SW	L	●	●	●	.375	.156	.016	.173
CCMT32.52SW	L	●	●	●	.375	.156	.031	.173

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
CCMT21.50.5MP	M	●	●	●	.250	.094	.008	.110
CCMT21.51MP	M	●	●	●	.250	.094	.016	.110
CCMT21.52MP	M	●	●	●	.250	.094	.031	.110
CCMT2.520.5MP	M	★	★		.313	.125	.008	.134
CCMT2.521MP	M	★	★		.313	.125	.016	.134
CCMT2.522MP	M	★	★		.313	.125	.031	.134
CCMT32.50.5MP	M	●	●	●	.375	.156	.008	.173
CCMT32.51MP	M	●	●	●	.375	.156	.016	.173
CCMT32.52MP	M	●	●	●	.375	.156	.031	.173
CCMT431MP	M	●	●	●	.500	.187	.016	.217
CCMT432MP	M	●	●	●	.500	.187	.031	.217
CCMT433MP	M	★	★	★	.500	.187	.047	.217
CCMH21.50.5MV	M		★	★	.250	.094	.008	.110
CCMH21.51MV	M		●	●	.250	.094	.016	.110
CCMT21.51MW	M	★	★	●	.250	.094	.016	.110
CCMT21.52MW	M	●	●	★	.250	.094	.031	.110
CCMT32.51MW	M	●	●	●	.375	.156	.016	.173
CCMT32.52MW	M	●	●	●	.375	.156	.031	.173
CCMT431MW	M	★	★	●	.500	.187	.016	.217
CCMT432MW	M	★	★	★	.500	.187	.031	.217

● : USA Stock ★ : Stocked in Japan
(10 inserts in one case)



Finish	Finish	Light	Light
FP	FV	LP	SW
			 (Wiper)
Medium	**Medium**		
MP	MV		
			

(inch)

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
DCMT21.50.5FP	F	●	★	★	.250	.094	.008	.110
DCMT21.51FP	F	●	●	●	.250	.094	.016	.110
DCMT32.50.5FP	F	●	★	●	.375	.156	.008	.173
DCMT32.51FP	F	●	●	●	.375	.156	.016	.173
DCMT32.52FP	F	●	●	★	.375	.156	.031	.173
DCMT21.50.5FV	F	★	★	★	.250	.094	.008	.110
DCMT21.51FV	F	★	●	●	.250	.094	.016	.110
DCMT21.52FV	F		●	★	.250	.094	.031	.110
DCMT32.50.5FV	F		●	★	.375	.156	.008	.173
DCMT32.51FV	F	★	●	●	.375	.156	.016	.173
DCMT32.52FV	F	★	●	●	.375	.156	.031	.173
DCMT21.50.5LP	L	●	★	★	.250	.094	.008	.110
DCMT21.51LP	L	●	●	●	.250	.094	.016	.110
DCMT21.52LP	L	★	●	●	.250	.094	.031	.110
DCMT32.50.5LP	L	★	●	★	.375	.156	.008	.173
DCMT32.51LP	L	●	●	●	.375	.156	.016	.173
DCMT32.52LP	L	●	●	●	.375	.156	.031	.173
DCMX21.50.5SW	L	●	●	●	.250	.094	.008	.110
DCMX21.51SW	L	●	●	●	.250	.094	.016	.110
DCMX21.52SW	L	●	●	●	.250	.094	.031	.110
DCMX32.50.5SW	L	●	●	●	.375	.156	.008	.173
DCMX32.51SW	L	●	●	●	.375	.156	.016	.173
DCMX32.52SW	L	●	●	●	.375	.156	.031	.173

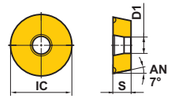
Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
DCMT21.50.5MP	M	★	●	★	.250	.094	.008	.110
DCMT21.51MP	M	●	●	●	.250	.094	.016	.110
DCMT21.52MP	M	★	●	●	.250	.094	.031	.110
DCMT32.50.5MP	M	★	●	★	.375	.156	.008	.173
DCMT32.51MP	M	●	●	●	.375	.156	.016	.173
DCMT32.52MP	M	●	●	●	.375	.156	.031	.173
DCMT32.53MP	M	★	●		.375	.156	.047	.173
DCMT431MP	M	●	●	★	.500	.187	.016	.217
DCMT432MP	M	●	★	●	.500	.187	.031	.217
DCMT433MP	M	★	★		.500	.187	.047	.217
DCMT21.50.5MV	M	★	●	★	.250	.094	.008	.110
DCMT21.51MV	M	★	★	●	.250	.094	.016	.110
DCMT21.52MV	M	★	★	●	.250	.094	.031	.110
DCMT32.50.5MV	M	★	●	●	.375	.156	.008	.173
DCMT32.51MV	M	★	●	●	.375	.156	.016	.173
DCMT32.52MV	M	★	★	●	.375	.156	.031	.173

MC6100 Series

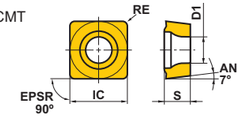
7° Positive Inserts (With Hole)

M Class

RCMT
RCMX



SCMT



Medium	Rough		
Standard	RR		
			
Finish	Finish	Light	Medium
FP	FV	LP	MP
			

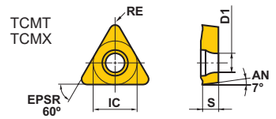
(inch)

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
RCMT0602M0	M	★	●		.236	.094	-	.110
RCMT0803M0	M	★	★		.315	.125	-	.134
RCMX1003M0	M	★	★	★	.394	.125	-	.142
RCMX1204M0	M	★	★	★	.472	.187	-	.165
RCMX1606M0	M	★	★	★	.630	.250	-	.205
RCMX2006M0	M	★	★	★	.787	.250	-	.256
RCMX2507M0	M	★	★	★	.984	.313	-	.283
RCMX3209M0	M	★	★	★	1.260	.375	-	.374
RCMX1606M0-RR	R	★	★	★	.630	.250	-	.205
RCMX2006M0-RR	R	★	★	★	.787	.250	-	.256
RCMX2507M0-RR	R	★	★	★	.984	.313	-	.283
RCMX3209M0-RR	R	★	★	★	1.260	.375	-	.374

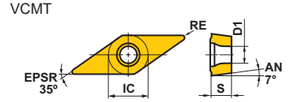
Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
SCMT32.51FP	F	★	★	★	.375	.156	.016	.173
SCMT32.52FP	F	★	★	★	.375	.156	.031	.173
SCMT32.51FV	F		★	★	.375	.156	.016	.173
SCMT32.51LP	L	★	●	★	.375	.156	.016	.173
SCMT32.52LP	L	★	●	★	.375	.156	.031	.173
SCMT32.51MP	M	★	★	●	.375	.156	.016	.173
SCMT32.52MP	M	●	★	●	.375	.156	.031	.173
SCMT431MP	M	★	●	★	.500	.187	.016	.217
SCMT432MP	M	★	★	●	.500	.187	.031	.217
SCMT433MP	M	★	★		.500	.187	.047	.217

● : USA Stock ★ : Stocked in Japan
(10 inserts in one case)

TCMT
TCMX



VCMT



Finish	Finish	Light	Light	Medium
FP	FV	LP	SW	MP
			 (Wiper)	
Finish	Finish	Light	Medium	Medium
FP	FV	LP	MP	MV
				

(inch)

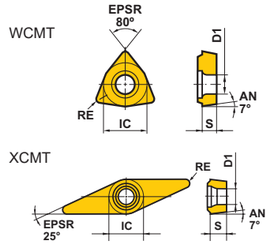
Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
TCMT1.81.50.5FP	F	★	★	★	.219	.094	.008	.098
TCMT1.81.51FP	F	●	★	★	.219	.094	.016	.098
TCMT21.50.5FP	F	●	★	★	.250	.094	.008	.110
TCMT21.51FP	F	●	●	●	.250	.094	.016	.110
TCMT32.51FP	F	★	★	★	.375	.156	.016	.173
TCMT21.51FV	F		●	●	.250	.094	.016	.110
TCMT32.51FV	F		★	★	.375	.156	.016	.173
TCMT1.81.51LP	L	★	●	★	.219	.094	.016	.098
TCMT1.81.52LP	L	★	★	★	.219	.094	.031	.098
TCMT21.50.5LP	L	●	●	●	.250	.094	.008	.110
TCMT21.51LP	L	●	●	●	.250	.094	.016	.110
TCMT21.52LP	L	★	●	★	.250	.094	.031	.110
TCMT32.51LP	L	●	●	★	.375	.156	.016	.173
TCMT32.52LP	L	●	●	★	.375	.156	.031	.173
TCMX1.81.51SW	L	●	●	●	.219	.094	.016	.098
TCMX21.51SW	L	●	●	●	.250	.094	.016	.110
TCMT1.81.51MP	M	●	★	★	.219	.094	.016	.098
TCMT1.81.52MP	M	★	●	★	.219	.094	.031	.098
TCMT21.50.5MP	M	★	●	★	.250	.094	.008	.110
TCMT21.51MP	M	●	●	●	.250	.094	.016	.110
TCMT21.52MP	M	●	●	●	.250	.094	.031	.110
TCMT2.521MP	M	★	★	●	.313	.125	.016	.134
TCMT32.51MP	M	●	●	●	.375	.156	.016	.173
TCMT32.52MP	M	●	★	●	.375	.156	.031	.173
TCMT32.53MP	M	●	★	★	.375	.156	.047	.173

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
VCMT1.51.50.5FP	F	●	●	●	.187	.094	.008	.094
VCMT1.51.51FP	F	●	●	●	.187	.094	.016	.094
VCMT220.5FP	F	★	●	★	.250	.125	.008	.110
VCMT221FP	F	●	●	●	.250	.125	.016	.110
VCMT331FP	F	●	●	★	.375	.187	.016	.173
VCMT332FP	F	★	●	★	.375	.187	.031	.173
VCMT1.51.50.5FV	F		★	●	.187	.094	.008	.094
VCMT1.51.51FV	F		★	●	.187	.094	.016	.094
VCMT331FV	F	★	●	●	.375	.187	.016	.173
VCMT332FV	F	★	●	●	.375	.187	.031	.173
VCMT1.51.50.5LP	L	●	●	★	.187	.094	.008	.094
VCMT1.51.51LP	L	●	●	★	.187	.094	.016	.094
VCMT221LP	L	●	●	★	.250	.125	.016	.110
VCMT222LP	L	●	●	★	.250	.125	.031	.110
VCMT331LP	L	●	●	★	.375	.187	.016	.173
VCMT332LP	L	●	●	★	.375	.187	.031	.173
VCMT221MP	M	●	★	●	.250	.125	.016	.110
VCMT331MP	M	●	★	●	.375	.187	.016	.173
VCMT332MP	M	●	★	●	.375	.187	.031	.173
VCMT333MP	M	★	★	★	.375	.187	.047	.173
VCMT1.51.50.5MV	M		●	★	.187	.094	.008	.094
VCMT1.51.51MV	M		★	●	.187	.094	.016	.094

MC6100 Series

7° Positive Inserts (With Hole)

M Class



Finish	Medium
FV	MP
	
Finish	
SVX	
	

(inch)

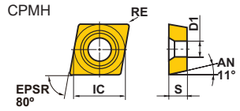
Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
WCMT1.210.5FV	F		●		.156	.063	.008	.091
WCMT1.211FV	F		●		.156	.063	.016	.091
WCMT1.51.50.5FV	F		●		.187	.094	.008	.091
WCMT1.51.51FV	F		●		.187	.094	.016	.091
WCMT21.50.5FV	F		●		.250	.094	.008	.110
WCMT21.51FV	F		●		.250	.094	.016	.110
WCMT32.50.5FV	F		●		.375	.156	.008	.173
WCMT32.51FV	F		●		.375	.156	.016	.173
WCMT1.210.5MP	M	●	●	●	.156	.063	.008	.091
WCMT1.211MP	M	●	●	●	.156	.063	.016	.091
WCMT1.51.50.5MP	M	●	●		.187	.094	.008	.091
WCMT1.51.51MP	M	●	★		.187	.094	.016	.091
WCMT21.50.5MP	M	●	●	●	.250	.094	.008	.110
WCMT21.51MP	M	●	●	●	.250	.094	.016	.110
WCMT21.52MP	M		●	●	.250	.094	.031	.110
WCMT32.51MP	M	●	●	●	.375	.156	.016	.173
WCMT32.52MP	M	●	●	●	.375	.156	.031	.173

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
XCMT221SVX	F		●	★	.250	.125	.016	.112
XCMT222SVX	F		★	●	.250	.125	.031	.112

● : USA Stock ★ : Stocked in Japan
(10 inserts in one case)

11° Positive Inserts (With Hole)

M Class



Finish	Finish	Light
FP	FV	LP
		
Medium	**Medium**	**Medium**
MP	MV	Standard
		

(inch)

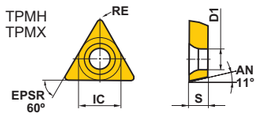
Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
CPMH2.51.50.5FP	F		●	●	.313	.094	.008	.138
CPMH2.51.51FP	F		●	●	.313	.094	.016	.138
CPMH320.5FP	F		●	●	.375	.125	.008	.177
CPMH321FP	F		●	●	.375	.125	.016	.177
CPMH322FP	F		●	●	.375	.125	.031	.177
CPMH2.51.50.5FV	F		★	★	.313	.094	.008	.138
CPMH2.51.51FV	F		★	★	.313	.094	.016	.138
CPMH320.5FV	F		★	★	.375	.125	.008	.177
CPMH321FV	F		●	★	.375	.125	.016	.177
CPMH322FV	F		●	★	.375	.125	.031	.177
CPMH2.51.50.5LP	L		★	★	.313	.094	.008	.138
CPMH2.51.51LP	L	●	★	★	.313	.094	.016	.138
CPMH2.51.52LP	L	●	●	●	.313	.094	.031	.138
CPMH320.5LP	L		★	★	.375	.125	.008	.177
CPMH321LP	L	●	★	★	.375	.125	.016	.177
CPMH322LP	L	●	★	★	.375	.125	.031	.177

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
CPMH2.51.51MP	M	●	●	●	.313	.094	.016	.138
CPMH2.51.52MP	M	●	●	●	.313	.094	.031	.138
CPMH321MP	M	●	●	●	.375	.125	.016	.177
CPMH322MP	M	●	●	●	.375	.125	.031	.177
CPMH2.51.51MV	M		●	●	.313	.094	.016	.138
CPMH2.51.52MV	M		●	●	.313	.094	.031	.138
CPMH321MV	M		●	●	.375	.125	.016	.177
CPMH322MV	M		●	●	.375	.125	.031	.177
CPMH2.51.51	M	●	●		.313	.094	.016	.138
CPMH2.51.52	M	●	●		.313	.094	.031	.138
CPMH321	M	●	●		.375	.125	.016	.177
CPMH322	M	●	●	★	.375	.125	.031	.177

MC6100 Series

11° Positive Inserts (With Hole)

M Class



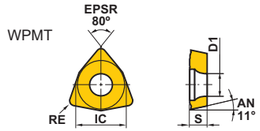
Finish	Finish	Light	Light
FP	FV	LP	SW
			 (Wiper)
Medium			
MV			
			

(inch)

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
TPMH1.81.50.5FP	F	●	●	●	.219	.094	.008	.114
TPMH1.81.51FP	F	●	●	●	.219	.094	.016	.114
TPMH220.5FP	F	●	●	●	.250	.125	.008	.134
TPMH221FP	F	●	●	●	.250	.125	.016	.134
TPMH222FP	F	●	●	●	.250	.125	.031	.134
TPMH1.51.50.5FV	F		★	★	.187	.094	.008	.094
TPMH1.51.51FV	F		●	★	.187	.094	.016	.094
TPMH1.81.50.5FV	F		★	★	.219	.094	.008	.114
TPMH1.81.51FV	F		●	★	.219	.094	.016	.114
TPMH220.5FV	F		●	★	.250	.125	.008	.134
TPMH221FV	F	●	●	★	.250	.125	.016	.134
TPMH222FV	F	●	●	★	.250	.125	.031	.134
TPMH320.5FV	F		●	★	.375	.125	.008	.173
TPMH321FV	F	●	●	★	.375	.125	.016	.173
TPMH322FV	F		●	★	.375	.125	.031	.173
TPMH1.51.50.5LP	L		★	★	.187	.094	.008	.094
TPMH1.51.51LP	L		★	★	.187	.094	.016	.094
TPMH1.81.50.5LP	L	●	●	★	.219	.094	.008	.114
TPMH1.81.51LP	L	●	★	★	.219	.094	.016	.114
TPMH220.5LP	L	●	★	★	.250	.125	.008	.134
TPMH221LP	L	●	★	★	.250	.125	.016	.134
TPMH222LP	L	●	★	★	.250	.125	.031	.134
TPMH320.5LP	L	●	★	★	.375	.125	.008	.173
TPMH321LP	L	●	★	●	.375	.125	.016	.173
TPMH322LP	L	●	●	●	.375	.125	.031	.173
TPMX1.81.50.5SW	L	●	●	●	.219	.094	.008	.114
TPMX1.81.51SW	L	●	●	●	.219	.094	.016	.114
TPMX1.81.52SW	L	●	●	●	.219	.094	.031	.114
TPMX220.5SW	L	●	●	●	.250	.125	.008	.134
TPMX221SW	L	●	●	●	.250	.125	.016	.134
TPMX222SW	L	●	●	●	.250	.125	.031	.134

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
TPMH1.51.50.5MV	M		★	★	.187	.094	.008	.094
TPMH1.51.51MV	M		★	★	.187	.094	.016	.094
TPMH1.81.50.5MV	M		★	★	.219	.094	.008	.114
TPMH1.81.51MV	M		★	★	.219	.094	.016	.114
TPMH1.81.52MV	M		★	★	.219	.094	.031	.114
TPMH220.5MV	M		★	★	.250	.125	.008	.134
TPMH221MV	M		★	★	.250	.125	.016	.134
TPMH222MV	M		★	★	.250	.125	.031	.134
TPMH321MV	M		●	●	.375	.125	.016	.173
TPMH322MV	M		●	●	.375	.125	.031	.173

● : USA Stock ★ : Stocked in Japan
(10 inserts in one case)



Medium
MV

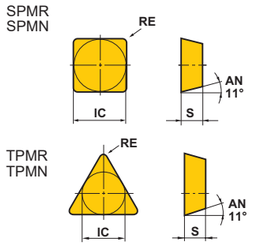

(inch)

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
WPMT21.50.5MV	M		●	★	.250	.094	.008	.110
WPMT21.51MV	M		★	●	.250	.094	.016	.110
WPMT321MV	M		●	★	.375	.125	.016	.173
WPMT322MV	M		★	★	.375	.125	.031	.173

MC6100 Series

11° Positive Inserts (Without Hole)

M Class



Light to Medium	Strong Edge			
Standard	Flat Top			
				
Finish	Light	Light to Medium	Light to Medium	Strong Edge
FV	LP	MP	Standard	Flat Top
				

(inch)

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
SPMR321	M	●	●	★	.375	.125	.016	-
SPMR322	M	●	●	★	.375	.125	.031	-
SPMR421	M	●	●	●	.500	.125	.016	-
SPMR422	M	●	●	●	.500	.125	.031	-
SPMN322	-	●			.375	.125	.031	-
SPMN421	-	●			.500	.125	.016	-
SPMN422	-	●			.500	.125	.031	-
SPMN423	-	●		★	.500	.125	.047	-

Order Number	Cutting Area	MC6115	MC6125	MC6135	IC	S	RE	D1
TPMR321FV	F		●	●	.375	.125	.016	-
TPMR221LP	L		●	●	.250	.125	.016	-
TPMR222LP	L		●	●	.250	.125	.031	-
TPMR321LP	L	●	●	●	.375	.125	.016	-
TPMR322LP	L	●	●	●	.375	.125	.031	-
TPMR221MP	M	●	●	●	.250	.125	.016	-
TPMR222MP	M	●	●	●	.250	.125	.031	-
TPMR321MP	M	●	●	●	.375	.125	.016	-
TPMR322MP	M	●	●	●	.375	.125	.031	-
TPMR221	M	●	●	●	.250	.125	.016	-
TPMR222	M	●	●	★	.250	.125	.031	-
TPMR321	M	●	●	●	.375	.125	.016	-
TPMR322	M	●	●	●	.375	.125	.031	-
TPMR323	M	●	●		.375	.125	.047	-
TPMN221	-	●			.250	.125	.016	-
TPMN222	-	●			.250	.125	.031	-
TPMN321	-	●			.375	.125	.016	-
TPMN322	-	●			.375	.125	.031	-
TPMN323	-	●			.375	.125	.047	-
TPMN431	-	●			.500	.187	.016	-
TPMN432	-	●		★	.500	.187	.031	-
TPMN433	-	●			.500	.187	.047	-

● : USA Stock ★ : Stocked in Japan
(10 inserts in one case)

Memo

CVD Coated Grade for Steel Turning

Recommended Cutting Conditions

Negative Inserts (For External Turning)

(inch)

Material	Properties	Cutting Range		Priority	Grade	Chipbreaker	Cutting Speed **vc** (SFM)	Feed **f** (IPR)	Depth of Cut **ap**
P									
Mild Steel	Hardness ≤180HB	✣	F	1	**MC6125**	**FY**	1260—1985	.004—.009	.008—.031
		✣	F	2	**MC6135**	**FY**	1030—1575	.004—.009	.008—.031
		✣	L	1	**MC6125**	**SY**	1150—1805	.006—.013	.020—.047
		✣	L	2	**MC6135**	**SY**	950—1425	.006—.013	.020—.047
Carbon Steel Alloy Steel	Hardness 180—280HB	●	F	1	**MC6115**	**FPH**	900—1720	.008—.020	.004—.039
		●	F	1	**MC6115**	**FP**	820—1575	.003—.010	.004—.039
		●	F	2	**MC6125**	**FP**	900—1395	.003—.010	.004—.039
		●	L	1	**MC6115**	**LP**	820—1575	.004—.016	.012—.079
		●	L	2	**MC6125**	**LP**	900—1395	.004—.016	.012—.079
		●	L	3	**MC6115**	**SH**	820—1575	.004—.016	.012—.079
		●	L	4	**MC6125**	**SH**	900—1395	.004—.016	.012—.079
		●	L	5	**MC6115**	**SA**	820—1575	.004—.016	.012—.079
		●	L	6	**MC6125**	**SA**	900—1395	.004—.016	.012—.079
		●	L	7	**MC6115**	**SW**	820—1575	.004—.020	.012—.098
		●	L	8	**MC6125**	**SW**	900—1395	.004—.020	.012—.098
		●	M	1	**MC6115**	**MP**	755—1445	.006—.020	.012—.157
		●	M	2	**MC6125**	**MP**	820—1280	.006—.020	.012—.157
		●	M	3	**MC6115**	**MA**	755—1445	.008—.020	.012—.157
		●	M	4	**MC6125**	**MA**	820—1280	.008—.020	.012—.157
		●	M	5	**MC6115**	**Std**	755—1445	.010—.024	.059—.197
		●	M	6	**MC6125**	**Std**	820—1280	.010—.024	.059—.197
		●	M	7	**MC6115**	**MW**	755—1445	.008—.024	.035—.157
		●	M	8	**MC6125**	**MW**	820—1280	.008—.024	.035—.157
		●	R	1	**MC6115**	**RP**	705—1360	.010—.024	.059—.236
		●	R	2	**MC6125**	**RP**	770—1215	.010—.024	.059—.236
		●	R	3	**MC6115**	**GH**	705—1360	.010—.024	.059—.236
		●	R	4	**MC6125**	**GH**	770—1215	.010—.024	.059—.236
		●	H	1	**MC6125**	**HX**	690—1080	.020—.050	.118—.433
		●	H	2	**MC6135**	**HX**	560—850	.020—.050	.118—.433
		●	H	3	**MC6125**	**HV**	575—885	.023—.050	.157—.472
		●	H	4	**MC6135**	**HV**	460—705	.023—.050	.157—.472
		◐	F	1	**MC6125**	**FPH**	985—1525	.008—.020	.004—.039
		◐	F	1	**MC6115**	**FP**	820—1575	.003—.010	.004—.039
		◐	F	2	**MC6125**	**FP**	900—1395	.003—.010	.004—.039
		◐	L	1	**MC6115**	**LP**	820—1575	.004—.016	.012—.079
		◐	L	2	**MC6125**	**LP**	900—1395	.004—.016	.012—.079
		◐	L	3	**MC6115**	**SH**	820—1575	.004—.016	.012—.079
		◐	L	4	**MC6125**	**SH**	900—1395	.004—.016	.012—.079
		◐	L	5	**MC6115**	**SA**	820—1575	.004—.016	.012—.079
		◐	L	6	**MC6125**	**SA**	900—1395	.004—.016	.012—.079
		◐	L	7	**MC6115**	**SW**	820—1575	.004—.020	.012—.098
		◐	L	8	**MC6125**	**SW**	900—1395	.004—.020	.012—.098
		◐	M	1	**MC6125**	**MP**	820—1280	.006—.020	.012—.157
		◐	M	2	**MC6135**	**MP**	670—1015	.006—.020	.012—.157
		◐	M	3	**MC6125**	**MA**	820—1280	.008—.020	.012—.157
		◐	M	4	**MC6135**	**MA**	670—1015	.008—.020	.012—.157
		◐	M	5	**MC6125**	**MH**	820—1280	.008—.022	.039—.157
		◐	M	6	**MC6135**	**MH**	670—1015	.008—.022	.039—.157
		◐	M	7	**MC6125**	**Std**	820—1280	.010—.024	.059—.197
		◐	M	8	**MC6135**	**Std**	670—1015	.010—.024	.059—.197
		◐	M	9	**MC6125**	**MW**	820—1280	.008—.024	.035—.157
		◐	M	10	**MC6135**	**MW**	670—1015	.008—.024	.035—.157

Note 1) Recommended cutting conditions for 5º/7º/11º positive inserts are provided as a guideline only.
Verify the recommended conditions for each boring bar as cutting conditions for internal machining will vary depending on the length of overhang.

(inch)

Material	Properties	Cutting Range		Priority	Grade	Chipbreaker	Cutting Speed **vc** (SFM)	Feed **f** (IPR)	Depth of Cut **ap**
Carbon Steel Alloy Steel	Hardness 180—280HB	◐	R	1	**MC6135**	**RP**	620—950	.010—.024	.059—.236
		◐	R	2	**MC6125**	**RP**	770—1215	.010—.024	.059—.236
		◐	R	3	**MC6135**	**GH**	620—950	.010—.024	.059—.236
		◐	R	4	**MC6125**	**GH**	770—1215	.010—.024	.059—.236
		◐	H	1	**MC6135**	**HX**	560—850	.020—.050	.118—.433
		◐	H	2	**MC6125**	**HX**	690—1080	.020—.050	.118—.433
		◐	H	3	**MC6135**	**HV**	460—705	.023—.050	.157—.472
		◐	H	4	**MC6125**	**HV**	575—885	.023—.050	.157—.472
		✣	F	1	**MC6135**	**FP**	805—1215	.003—.010	.004—.039
		✣	F	2	**MC6125**	**FP**	985—1525	.003—.010	.004—.039
		✣	F	3	**MC6135**	**FPH**	805—1215	.008—.020	.004—.039
		✣	L	1	**MC6135**	**LP**	740—1115	.004—.016	.012—.079
		✣	L	2	**MC6125**	**LP**	900—1395	.004—.016	.012—.079
		✣	L	3	**MC6135**	**SH**	740—1115	.004—.016	.012—.079
		✣	L	4	**MC6125**	**SH**	900—1395	.004—.016	.012—.079
		✣	L	5	**MC6135**	**SA**	740—1115	.004—.016	.012—.079
		✣	L	6	**MC6125**	**SA**	900—1395	.004—.016	.012—.079
		✣	M	1	**MC6135**	**MP**	670—1015	.006—.020	.012—.157
		✣	M	2	**MC6125**	**MP**	820—1280	.006—.020	.012—.157
		✣	M	3	**MC6135**	**MA**	670—1015	.008—.020	.012—.157
		✣	M	4	**MC6125**	**MA**	820—1280	.008—.020	.012—.157
		✣	M	5	**MC6135**	**MH**	670—1015	.008—.022	.039—.157
		✣	M	6	**MC6125**	**MH**	820—1280	.008—.022	.039—.157
		✣	M	7	**MC6135**	**Std**	670—1015	.010—.024	.059—.197
		✣	M	8	**MC6125**	**Std**	820—1280	.010—.024	.059—.197
		✣	M	9	**MC6135**	**MW**	670—1015	.008—.024	.035—.157
		✣	M	10	**MC6125**	**MW**	820—1280	.008—.024	.035—.157
		✣	R	1	**MC6135**	**RP**	620—950	.010—.024	.059—.236
		✣	R	2	**MC6125**	**RP**	770—1215	.010—.024	.059—.236
		✣	R	3	**MC6135**	**GH**	620—950	.010—.024	.059—.236
		✣	R	4	**MC6125**	**GH**	770—1215	.010—.024	.059—.236
		✣	H	1	**MC6135**	**HX**	560—850	.020—.050	.118—.433
		✣	H	2	**MC6125**	**HX**	690—1080	.020—.050	.118—.433

Note 1) Recommended cutting conditions for 5º/7º/11º positive inserts are provided as a guideline only.
Verify the recommended conditions for each boring bar as cutting conditions for internal machining will vary depending on the length of overhang.

Cutting Conditions : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting
Cutting Area : **F** : Finish Cutting **L** : Light Cutting **M** : Medium Cutting **R** : Rough Cutting **H** : Heavy Cutting

CVD Coated Grade for Steel Turning

Recommended Cutting Conditions

5° 7° Positive Inserts (For External Turning)

(inch)

Material	Properties	Cutting Range		Priority	Grade	Chipbreaker	Cutting Speed **vc** (SFM)	Feed **f** (IPR)	Depth of Cut **ap**
P									
Mild Steel	Hardness ≤180HB	●	F	1	**MC6115**	**FP**	970—1870	.002—.008	.008—.035
		●	F	2	**MC6115**	**FV**	970—1870	.002—.008	.008—.035
		●	L	1	**MC6115**	**LP**	970—1870	.002—.010	.008—.039
		●	L	2	**MC6115**	**SW**	970—1870	.002—.009	.008—.059
		●	M	1	**MC6115**	**MP**	805—1560	.003—.012	.012—.079
		●	M	2	**MC6115**	**MV**	805—1560	.003—.012	.012—.079
		●	M	3	**MC6115**	**MW**	805—1560	.004—.014	.031—.098
		✤	F	1	**MC6125**	**FP**	1050—1655	.002—.008	.008—.035
		✤	F	2	**MC6135**	**FP**	870—1310	.002—.008	.008—.035
		✤	L	1	**MC6125**	**LP**	1050—1655	.002—.010	.008—.039
		✤	L	2	**MC6135**	**LP**	870—1310	.002—.010	.008—.039
		✤	L	3	**MC6125**	**SW**	1050—1655	.002—.009	.008—.059
		✤	M	1	**MC6125**	**MP**	885—1380	.003—.012	.012—.079
		✤	M	2	**MC6135**	**MP**	720—1080	.003—.012	.012—.079
		✤	M	3	**MC6125**	**MV**	885—1380	.003—.012	.012—.079
		✤	M	4	**MC6125**	**MW**	885—1380	.004—.014	.031—.098
Carbon Steel Alloy Steel	Hardness 180—280HB	●	F	1	**MC6115**	**FP**	720—1380	.002—.008	.008—.035
		●	F	2	**MC6125**	**FP**	785—1215	.002—.008	.008—.035
		●	F	3	**MC6115**	**FV**	720—1380	.002—.008	.008—.035
		●	L	1	**MC6115**	**LP**	720—1380	.002—.010	.008—.039
		●	L	2	**MC6125**	**LP**	785—1215	.002—.010	.008—.039
		●	M	1	**MC6125**	**MP**	655—1015	.003—.012	.012—.079
		●	M	2	**MC6115**	**MP**	590—1150	.003—.012	.012—.079
		●	M	3	**MC6125**	**MV**	655—1015	.003—.012	.012—.079
		●	M	4	**MC6115**	**MV**	590—1150	.003—.012	.012—.079
		●	M	5	**MC6115**	**MW**	590—1150	.004—.014	.031—.098
		✤	F	1	**MC6125**	**FP**	785—1215	.002—.008	.008—.035
		✤	F	2	**MC6135**	**FP**	640—970	.002—.008	.008—.035
		✤	F	3	**MC6125**	**FV**	785—1215	.002—.008	.008—.035
		✤	L	1	**MC6125**	**LP**	785—1215	.002—.010	.008—.039
		✤	L	2	**MC6135**	**LP**	640—970	.002—.010	.008—.039
		✤	L	3	**MC6125**	**SW**	785—1215	.002—.009	.008—.059
		✤	M	1	**MC6125**	**MP**	655—1015	.003—.012	.012—.079
		✤	M	2	**MC6135**	**MP**	525—805	.003—.012	.012—.079
		✤	M	3	**MC6125**	**MV**	655—1015	.003—.012	.012—.079
Carbon Steel Alloy Steel	Hardness 280—350HB	●	F	1	**MC6115**	**FP**	510—970	.002—.008	.008—.035
		●	F	2	**MC6115**	**FV**	510—970	.002—.008	.008—.035
		●	L	1	**MC6115**	**LP**	510—970	.002—.010	.008—.039
		●	M	1	**MC6115**	**MP**	425—805	.003—.012	.012—.079
		●	M	2	**MC6115**	**MV**	425—805	.003—.012	.012—.079
		✤	F	1	**MC6125**	**FP**	560—870	.002—.008	.008—.035
		✤	F	2	**MC6135**	**FP**	440—690	.002—.008	.008—.035
		✤	L	1	**MC6125**	**LP**	560—870	.002—.010	.008—.039
		✤	L	2	**MC6135**	**LP**	440—690	.002—.010	.008—.039
		✤	M	1	**MC6125**	**MP**	460—720	.003—.012	.012—.079
		✤	M	2	**MC6135**	**MP**	375—575	.003—.012	.012—.079
		✤	M	3	**MC6125**	**MV**	460—720	.003—.012	.012—.079

Note 1) Recommended cutting conditions for 5º/7º/11º positive inserts are provided as a guideline only.
Verify the recommended conditions for each boring bar as cutting conditions for internal machining will vary depending on the length of overhang.

11° Positive Inserts (For External Turning)

(inch)

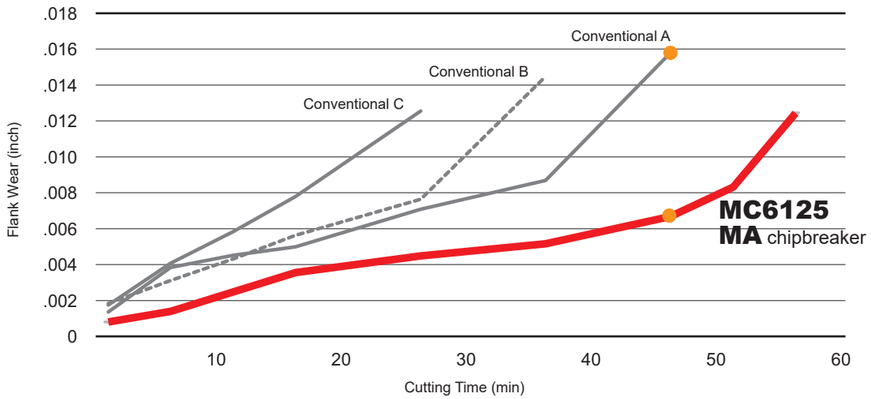
Material	Properties	Cutting Range		Priority	Grade	Chipbreaker	Cutting Speed **vc** (SFM)	Feed **f** (IPR)	Depth of Cut **ap**
P									
Mild Steel	Hardness ≤180HB	●	F	1	**MC6125**	**FP**	1050—1655	.002—.008	.008—.035
		●	F	2	**MC6125**	**FV**	1050—1655	.002—.008	.008—.035
		●	L	1	**MC6125**	**LP**	1050—1655	.002—.010	.008—.039
		●	L	2	**MC6115**	**R-Std**	805—1560	.003—.012	.012—.079
		●	M	1	**MC6125**	**MP**	885—1380	.003—.012	.012—.079
		●	M	2	**MC6115**	**MP**	805—1560	.003—.012	.012—.079
		●	M	3	**MC6125**	**MV**	885—1380	.003—.012	.012—.079
		●	M	4	**MC6115**	**MV**	805—1560	.003—.012	.012—.079
		✤	L	1	**MC6125**	**LP**	1050—1655	.002—.010	.008—.039
		✤	L	2	**MC6135**	**LP**	870—1310	.002—.010	.008—.039
		✤	M	1	**MC6125**	**MP**	885—1380	.003—.012	.012—.079
		✤	M	2	**MC6135**	**MP**	720—1080	.003—.012	.012—.079
		✤	M	3	**MC6125**	**MV**	885—1380	.003—.012	.012—.079
		✤	M	4	**MC6135**	**MV**	720—1080	.003—.012	.012—.079
Carbon Steel Alloy Steel	Hardness 180—280HB	●	F	1	**MC6125**	**FP**	785—1215	.002—.008	.008—.035
		●	F	2	**MC6125**	**FV**	785—1215	.002—.008	.008—.035
		●	L	1	**MC6125**	**LP**	785—1215	.002—.010	.008—.039
		●	L	2	**MC6115**	**LP**	720—1380	.002—.010	.008—.039
		●	M	1	**MC6125**	**MP**	655—1015	.003—.012	.012—.079
		●	M	2	**MC6125**	**MV**	655—1015	.003—.012	.012—.079
		●	M	3	**MC6115**	**R-Std**	590—1150	.003—.012	.012—.079
		●	M	4	**MC6125**	**R-Std**	655—1015	.003—.012	.012—.079
		✤	L	1	**MC6125**	**LP**	785—1215	.002—.010	.008—.039
		✤	L	2	**MC6135**	**LP**	640—970	.002—.010	.008—.039
		✤	M	1	**MC6125**	**MP**	655—1015	.003—.012	.012—.079
		✤	M	2	**MC6135**	**MP**	525—805	.003—.012	.012—.079
		✤	M	3	**MC6125**	**MV**	655—1015	.003—.012	.012—.079
		✤	M	4	**MC6135**	**MV**	525—805	.003—.012	.012—.079

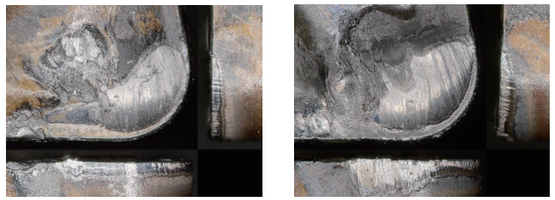
Cutting Conditions : ● : Stable Cutting ◐ : General Cutting ✤ : Unstable Cutting
Cutting Area : **F** : Finish Cutting **L** : Light Cutting **M** : Medium Cutting **R** : Rough Cutting

Cutting Performance

Machining 5120H : Comparison of Wear Resistance During Continuous Wet Cutting

The thick coating exclusively for MC6125 effectively suppresses early wear.





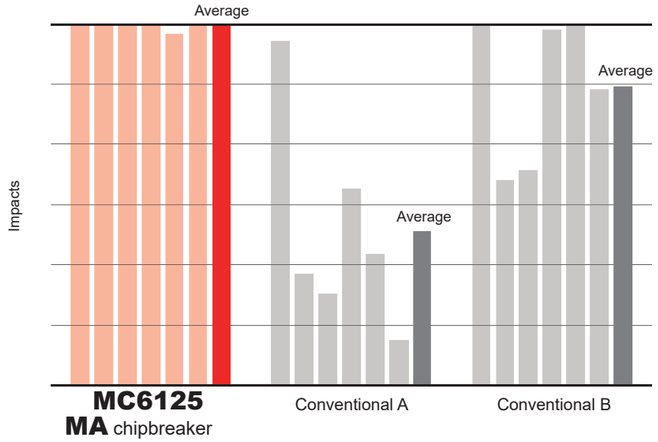
MC6125 46 min.

Conventional A 46 min.

<Cutting Conditions>
Material : ANSI 5120H
Inserts : CNMG432-◌◌
Cutting Speed : vc=985 SFM
Feed per Rev. : f=.012 IPR
Depth of Cut : ap=.059 inch
Cutting Mode : Wet Cutting

Comparison of Toughness During Interrupted Cutting

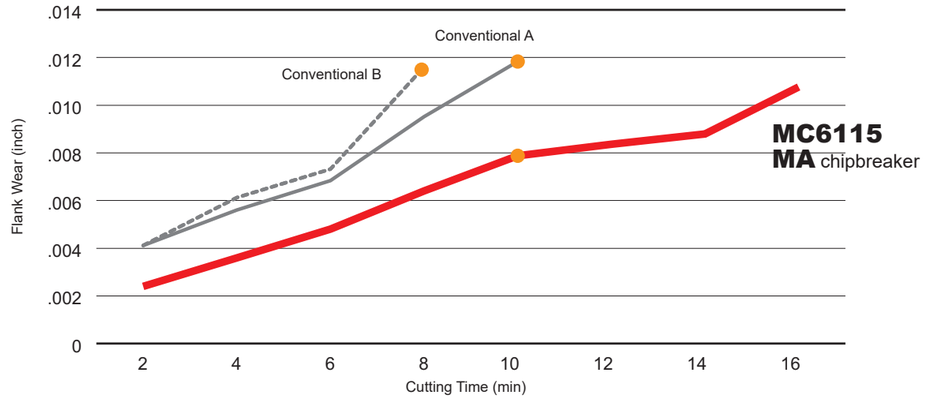
Provides stable cutting under severe cutting conditions that are likely to cause sudden fracturing.

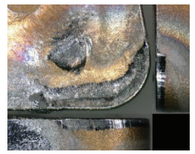


<Cutting Conditions>
Material : AISI 4140
Inserts : CNMG432◌◌
Cutting Speed : vc=655 SFM
Feed per Rev. : f=.010 IPR
Depth of Cut : ap=.059 inch
Cutting Mode : Wet Cutting

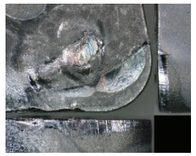
Machining 1045 : Comparison of Wear Resistance During Continuous Dry Cutting

The "Super" Nano Texture Technology increases tool life even when dry cutting by suppressing crater wear.

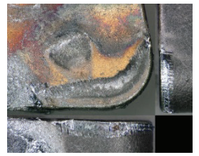




MC6115 10 min.



Conventional A 10 min.

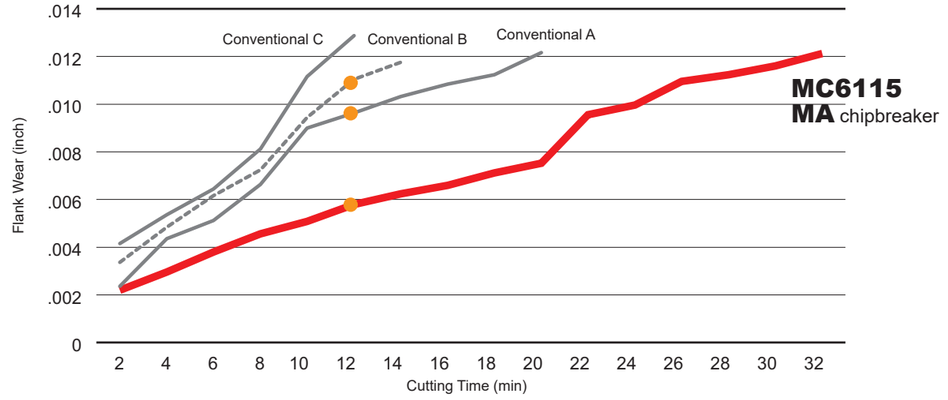


Conventional B 8 min.

<Cutting Conditions>
Material : AISI 1045
Inserts : CNMG432◌◌
Cutting Speed : vc=985 SFM
Feed per Rev. : f=.012 IPR
Depth of Cut : ap=.059 inch
Cutting Mode : Dry Cutting

Machining 52100 : Comparison of Wear Resistance During Continuous Wet Cutting

The thick coating provides high flank wear resistance.



MC6115 12 min.

Conventional A 12 min.

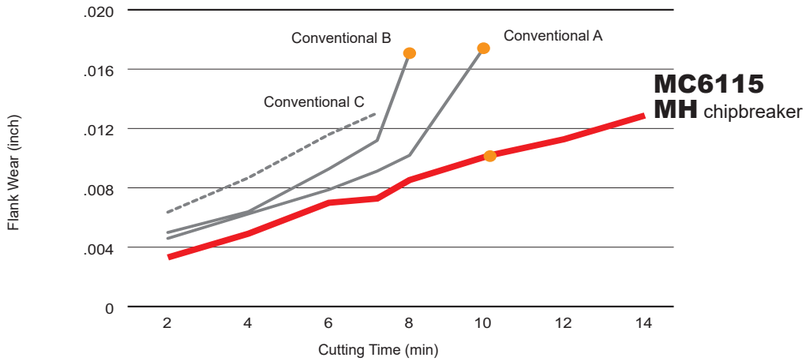
Conventional B 12 min.

<Cutting Conditions>
Material : AISI 52100
Inserts : CNMG432◌◌
Cutting Speed : vc=985 SFM
Feed per Rev. : f=.012 IPR
Depth of Cut : ap=.059 inch
Cutting Mode : Wet Cutting

Cutting Performance

Machining 4140 : Comparison of Wear Resistance During Continuous Wet Cutting

MC6115 with high edge strength chipbreaker can also enable excellent wear resistance during high speed turning.



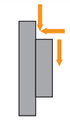
MC6115 10 min.

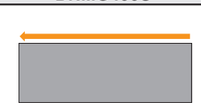
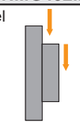
Conventional A 10 min.

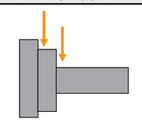
Conventional B 8 min.

<Cutting Conditions>
Material : AISI 4140
Inserts : CNMG432○○
Cutting Speed : vc=1150 SFM
Feed per Rev. : f=.012 IPR
Depth of Cut : ap=.059 inch
Cutting Mode : Wet Cutting

Examples of Usage

Insert		CNMG432MA	WNMG432MP
Workpiece		AISI 1045 	Carbon Steel 
Component		Hex Bar Parts	Automotive Parts
Application		Interrupted Finish Turning	External Turning and Facing
Cutting Conditions	Cutting Speed vc (SFM)	490	260
	Feed per Rev. f (IPR)	.008	.004 - .020
	Depth of Cut ap (inch)	.079, .063	.020
Cutting Mode		Wet Cutting	Wet Cutting
Results		Number of Workpieces 500 1000 **MC6125** Conventional Conventional products fractured after chipping but MC6125 formed good chip shapes and achieved a longer tool life.	Number of Workpieces 500 1000 1500 2000 2500 **MC6125** Conventional MC6125 achieved more than 1.3 times longer tool life due to its high wear resistance.

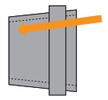
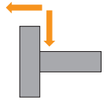
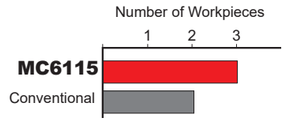
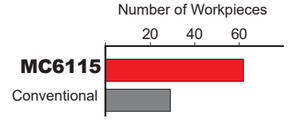
Insert		DNMG433S	CNMG432MH
Workpiece		AISI 1053 	General Structural Steel 
Component		–	Hun Parts
Application		Interrupted Finish Turning	Face Turning
Cutting Conditions	Cutting Speed vc (SFM)	655	655→785
	Feed per Rev. f (IPR)	.012	.010
	Depth of Cut ap (inch)	.047	.079
Cutting Mode		Wet Cutting	Wet Cutting
Results		Number of Workpieces 50 100 150 **MC6125** Conventional MC6125 provided a stable cutting action and achieved 1.5 times more tool life than conventional products.	Number of Workpieces 50 100 150 200 **MC6125** Conventional MC6125 improved efficiency and tool life by increasing the cutting speed.

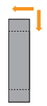
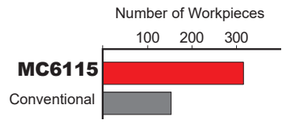
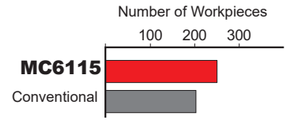
Insert		CNMG433RP
Workpiece		AISI 5135 
Component		Flange Parts
Application		External Turning and Facing
Cutting Conditions	Cutting Speed vc (SFM)	655
	Feed per Rev. f (IPR)	.010
	Depth of Cut ap (inch)	.059
Cutting Mode		Wet Cutting
Results		Number of Workpieces 50 100 **MC6125** Conventional Conventional products machined an inconsistent number of components. MC6125 was more consistent and improved tool life.

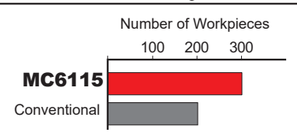
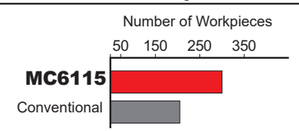
The application examples are from customers workpieces and can therefore differ from the recommended cutting conditions.

CVD Coated Grade for Steel Turning

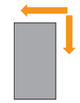
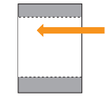
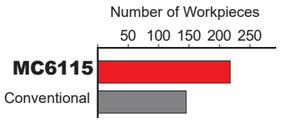
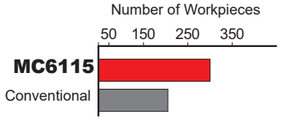
Examples of Usage

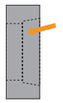
Insert		CNMG432MA	WNMG432MA
Workpiece		AISI 4140 	AISI 5140 
Component		Heavy Machinery Parts	Automotive Parts
Application		Internal Turning	External Face Turning
Cutting Conditions	Cutting Speed vc (SFM)	490	950
	Feed per Rev. f (IPR)	.012	.010
	Depth of Cut ap (inch)	.059	.039
Cutting Mode		Wet Cutting	Wet Cutting
Results		 Tool life increased x 1.5 on a large workpiece (inner diameter 16.929 inches)	 The excellent wear resistance of MC6115 helped achieve double tool life.

Insert		WNMG432MA	WNMG433MP
Workpiece		AISI 52100 	AISI 5120H 
Component		Bearing Parts	Machine Parts
Application		External Face Turning	Face Turning
Cutting Conditions	Cutting Speed vc (SFM)	650-910	770
	Feed per Rev. f (IPR)	.008-.012	.014
	Depth of Cut ap (inch)	.039	.039
Cutting Mode		Wet Cutting	Wet Cutting
Results		 The excellent wear resistance of MC6115 helped achieve double tool life.	 MC6115 achieved longer tool life compared to a conventional product.

Insert		WNMG432MP	WNMG434MA
Workpiece		AISI 5140 	AISI 1049 
Component		Hub	Joint Parts
Application		External Turning and Facing	Internal Turning and Facing
Cutting Conditions	Cutting Speed vc (SFM)	985	705
	Feed per Rev. f (IPR)	.010-.014	.010-.011
	Depth of Cut ap (inch)	.039-.098	.124
Cutting Mode		Wet Cutting	Wet Cutting
Results		 Superior wear resistance compared to conventional products meant tool life was extended.	 Excellent wear resistance during rough machining of forged product applications helped achieve 150% tool life.

The application examples are from customers workpieces and can therefore differ from the recommended cutting conditions.

Insert		DNMG443SA	CNMG432MP
Workpiece		Bearing Steel 	AISI 5140 
Component		Bearing Parts	Shaft Parts
Application		External Turning and Facing	Internal Turning
Cutting Conditions	Cutting Speed vc (SFM)	850	920
	Feed per Rev. f (IPR)	.012-.014	.011
	Depth of Cut ap (inch)	.020	.098
Cutting Mode		Wet Cutting	Wet Cutting
Results		 Extreme resistance to chipping achieved 150% tool life and enabled easy identification of wear.	 Number of components machined increased by 50% due to improved wear resistance.

Insert		WNMG432MP
Workpiece		Heated Tool Steel 
Component		Die Casting Parts
Application		Internal Turning
Cutting Conditions	Cutting Speed vc (SFM)	525
	Feed per Rev. f (IPR)	.010
	Depth of Cut ap (inch)	.079
Cutting Mode		Wet Cutting
Results		 MC6115 gave 1.5 x longer tool life even when machining heat treated materials.

The application examples are from customers workpieces and can therefore differ from the recommended cutting conditions.

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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.

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