

CVD Coated Grade for Steel Turning

MC6100 Series

Series
Addition

Bringing the Ultimate High Speed Cutting Performance

Introducing **MC6125**, the first recommendation for steel turning.



For High Speed Turning
MC6115

NEW

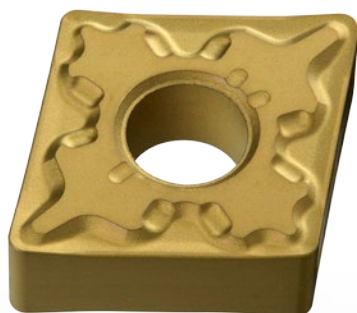
First Recommendation
MC6125

CVD Coated Grade for Steel Turning

MC6100 Series

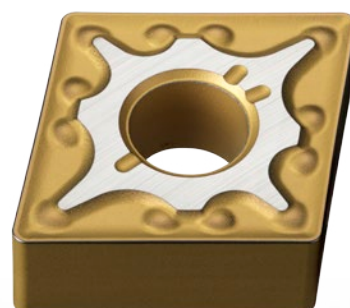
Dramatic increase in stability and wear resistance, enabled by utilising the improved coating adhesion and crystal orientation technology.

For High Speed Turning
MC6115



NEW

First Recommendation
MC6125



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.

MC6100

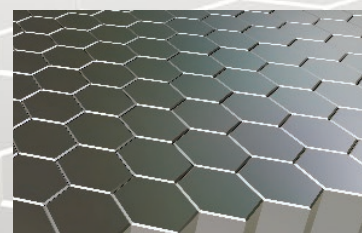
Conventional A



Conventional B



10 times more than conventional inserts



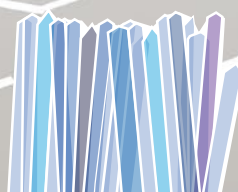
*By Image

The ratio of Al_2O_3 crystal grains with the same orientation



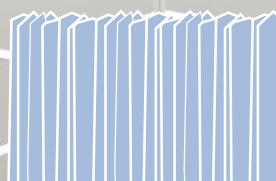
Conventional CVD inserts

Grain size and growth direction are uneven.



Nano Texture

Uniformity of the grain size and growth direction has improved.



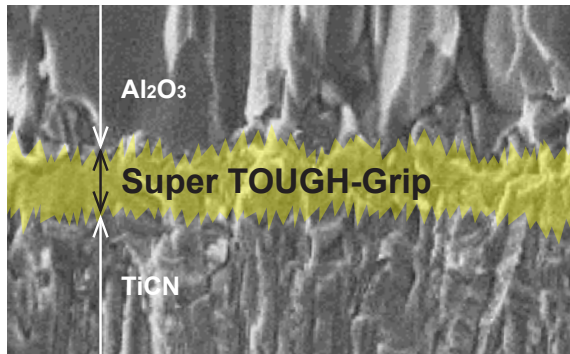
"Super" Nano Texture

Uniformity of the growth direction has drastically improved.

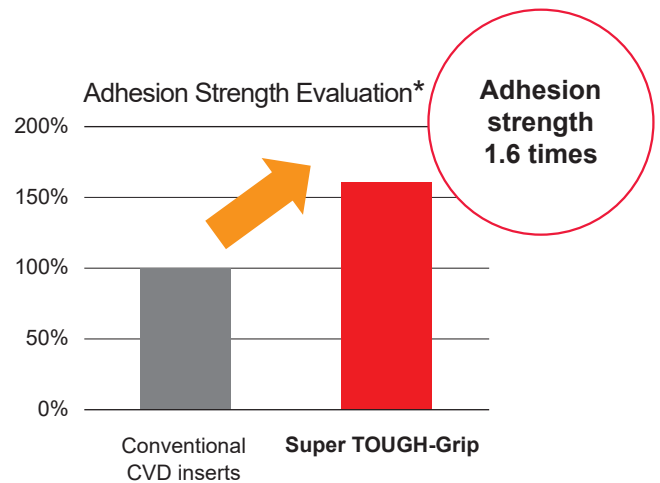
Crystal Orientation

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



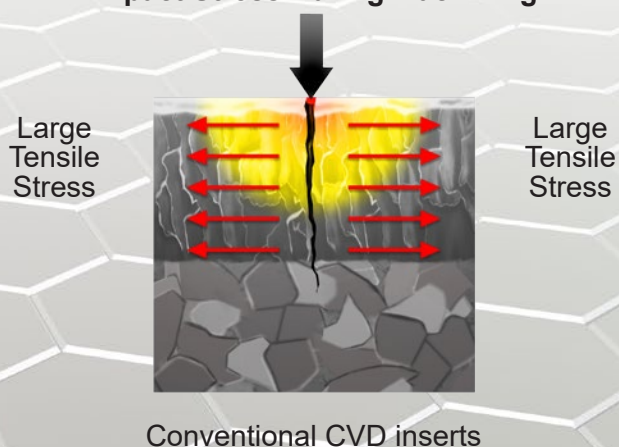
*Adhesion strength measurement is obtained from a scratch test that records the force needed to peel the coating layers.

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.

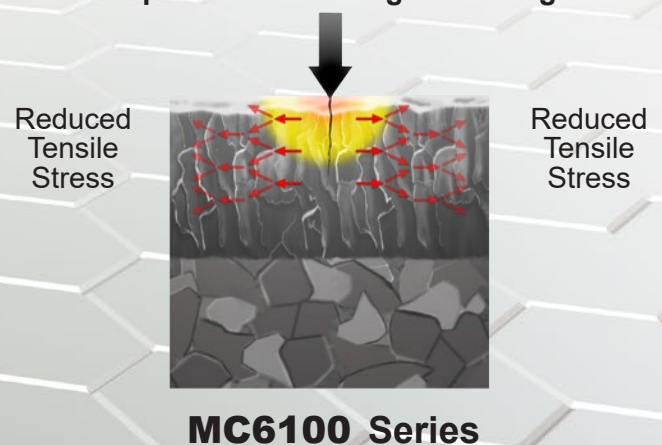
Relaxing of the Tensile Stress

Impact Stress During Machining



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

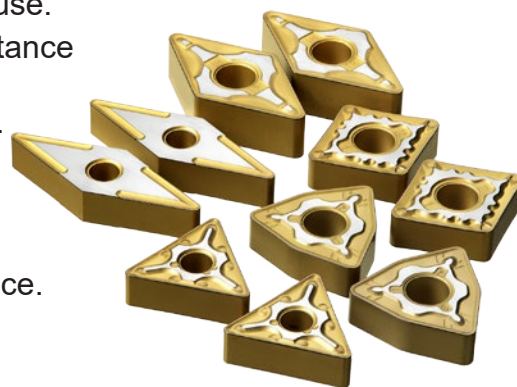
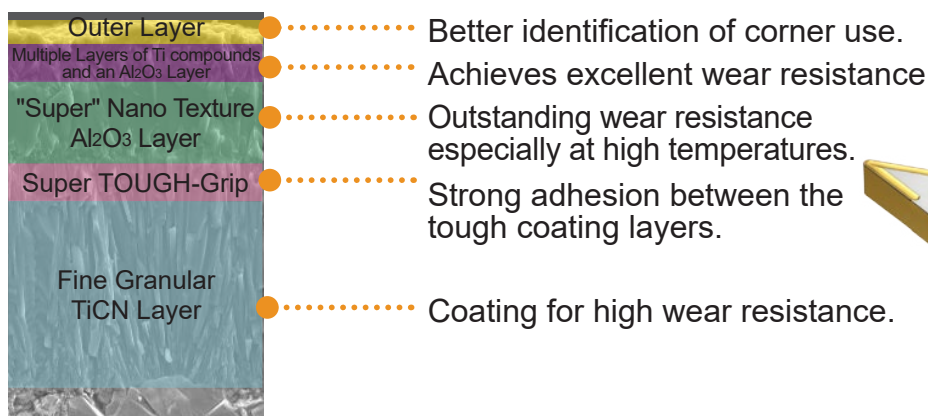


MC6100 series has a much lower level of stress than conventional CVD coatings due to the surface treatment. This divides the force of impacts during machining and protects from sudden fracturing.

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.**

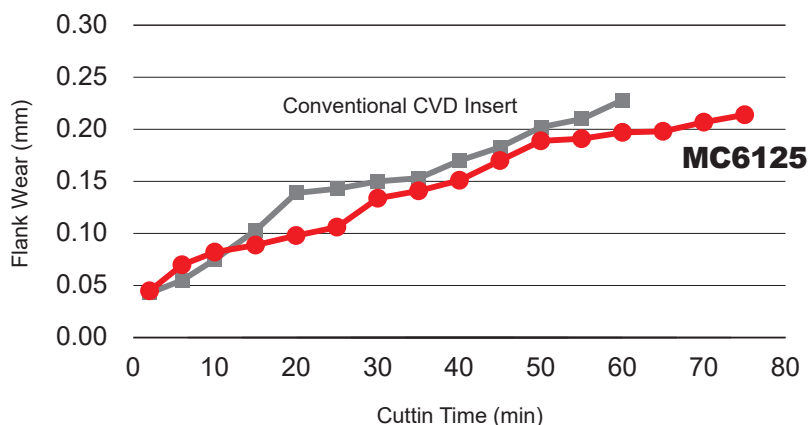


Special Smooth Surface Treatment

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

Machining S45C : Comparison of Wear Resistance

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



<Cutting Conditions>
Workpiece Material : JIS S45C
Inserts : CNMG120408-MA
Cutting Speed : $v_c = 200$ m/min
Feed per Rev. : $f = 0.3$ mm/rev
Depth of Cut : $a_p = 1.5$ mm
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.



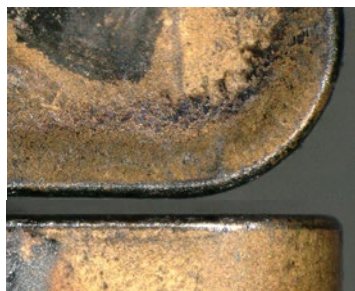
Improved Outer Coating (Layer)

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

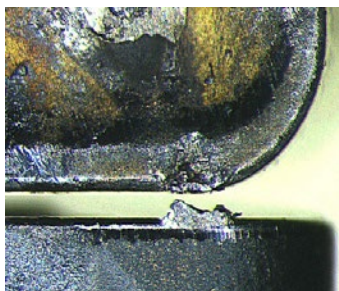
Example when machining Scr420H

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

After 2 Minutes Machining



MC6115 MH Breaker

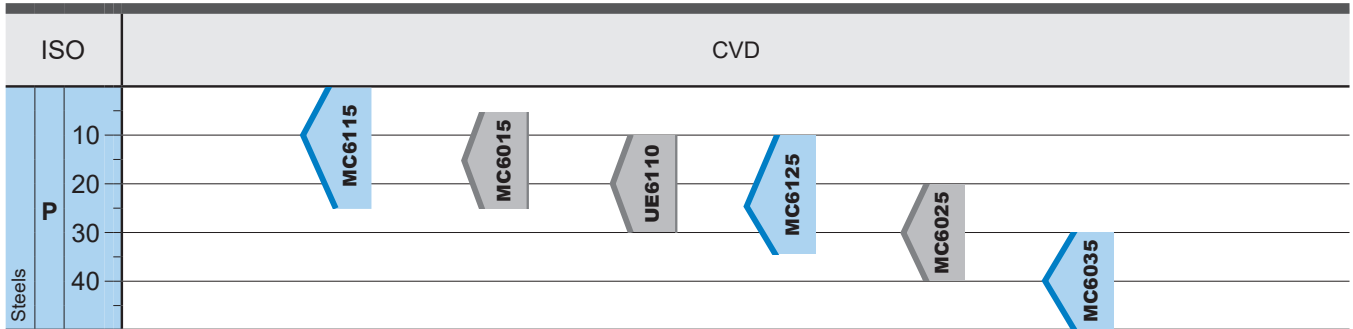


Conventional CVD Insert

<Cutting Conditions>

Workpiece Material	: JIS SCr420H 170HB
Inserts	: CNMG120408-MH
Cutting Speed	: $v_c = 200$ m/min
Feed per Rev.	: $f = 0.3$ mm/rev
Depth of Cut	: $a_p = 1.5$ mm
Cutting Mode	: Dry Cutting

Application Range

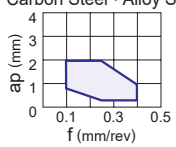
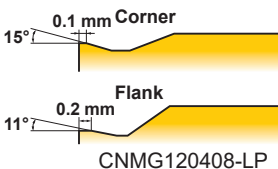
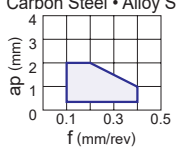
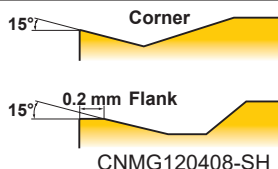
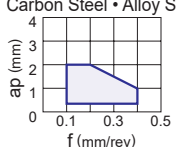
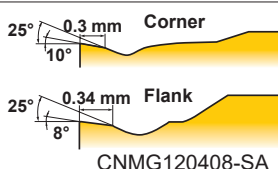
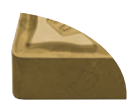
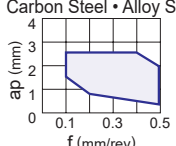
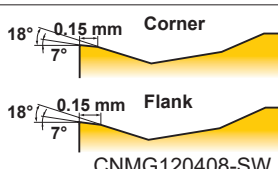
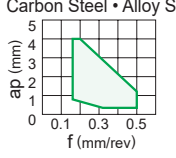
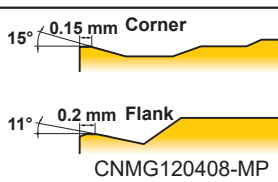
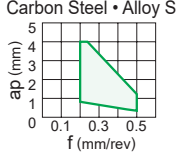
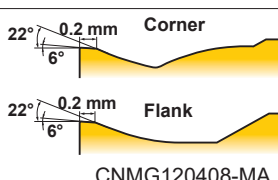
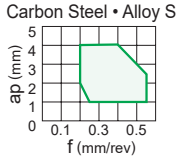
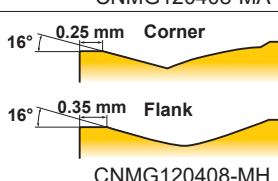
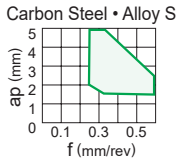
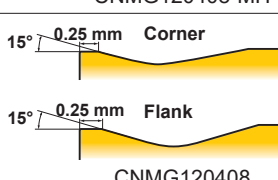
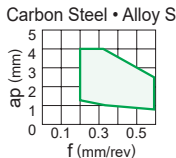
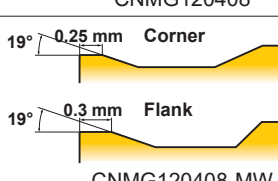


Selection Criteria

Work Material	Cutting Mode	Grade
Steels	Continuous Cutting	MC6115
	Low	MC6125
	Medium	MC6035
	High	
	Interrupted Cutting	

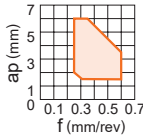
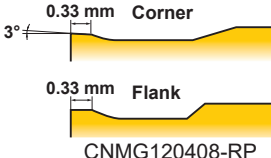
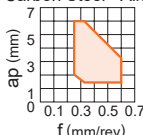
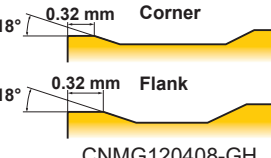
Chip Breaker System for Steel Turning

Negative Inserts

Application	Tolerance	Chip Breaker Name and Picture	Features	Cross Section Geometry
Light Cutting	M	LP 	First recommendation for light cutting of carbon steel and alloy steel Stable chip control in the light cutting range. The curved edge allows smooth chip discharge.	Carbon Steel • Alloy Steel   CNMG120408-LP
		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   CNMG120408-SH
		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   CNMG120408-SA
		SW 	Wiper insert for light cutting of carbon steel, alloy steel, stainless steel and cast iron In comparison to conventional chip breakers, 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   CNMG120408-SW
Medium Cutting	M	MP 	First recommendation for medium cutting of carbon steel and alloy steel Suitable for medium to light cutting. Breaker geometry appropriate for copying and back turning. Cutting edge geometry for an optimum balance of sharpness and fracture resistance.	Carbon Steel • Alloy Steel   CNMG120408-MP
		MA 	First recommendation for medium cutting of carbon steel and alloy steel Ideal for general cutting applications. Positive land provides sharp cutting action.	Carbon Steel • Alloy Steel   CNMG120408-MA
		MH 	Alternative chipbreaker for medium cutting of carbon steel and alloy steel Flat land offers high edge strength. Good chip control with suitable chip pocket.	Carbon Steel • Alloy Steel   CNMG120408-MH
		Standard 	Alternative chipbreaker for medium cutting of carbon steel and alloy steel Flat land offers high edge strength. Flat top breaker shape offers high edge strength.	Carbon Steel • Alloy Steel   CNMG120408
		MW 	Wiper insert for medium cutting 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   CNMG120408-MW

Chip Breaker System for Steel Turning

Negative Inserts

Application	Tolerance	Chip Breaker Name and Picture	Features	Cross Section Geometry
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   CNMG120408-RP
		GH 	Alternative chip breaker 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   CNMG120408-GH

Recommended Cutting Conditions

Negative Inserts (For External Turning)

Negative Inserts (For External Turning)									(mm)		
Work Material		Properties		Cutting Range		Priority	Grade	Chip Breaker	Cutting Speed vc (m/min)	Feed f (mm/rev)	Depth of Cut ap
P	Carbon and Alloy Steels	180—280HB	●	L	1	MC6115	LP	250—480	0.10—0.40	0.30—2.00	
			●	L	2	MC6125	LP	275—425	0.10—0.40	0.30—2.00	
			●	L	3	MC6115	SH	250—480	0.10—0.40	0.30—2.00	
			●	L	4	MC6125	SH	275—425	0.10—0.40	0.30—2.00	
			●	L	5	MC6115	SA	250—480	0.10—0.40	0.30—2.00	
			●	L	6	MC6125	SA	275—425	0.10—0.40	0.30—2.00	
			●	L	7	MC6115	SW	250—480	0.10—0.50	0.30—2.50	
			●	L	8	MC6125	SW	275—425	0.10—0.50	0.30—2.50	
			●	M	1	MC6115	MP	230—440	0.16—0.50	0.30—4.00	
			●	M	2	MC6125	MP	250—390	0.16—0.50	0.30—4.00	
			●	M	3	MC6115	MA	230—440	0.2—0.500	0.30—4.00	
			●	M	4	MC6125	MA	250—390	0.20—0.50	0.30—4.00	
			●	M	5	MC6115	Std	230—440	0.25—0.60	1.50—5.00	
			●	M	6	MC6125	Std	250—390	0.25—0.60	1.50—5.00	
			●	M	7	MC6115	MW	230—440	0.20—0.60	0.90—4.00	
			●	M	8	MC6125	MW	250—390	0.20—0.60	0.90—4.00	
			●	R	1	MC6115	RP	215—415	0.25—0.60	1.50—6.00	
			●	R	2	MC6125	RP	235—370	0.25—0.60	1.50—6.00	
			●	R	3	MC6115	GH	215—415	0.25—0.60	1.50—6.00	
			●	R	4	MC6125	GH	235—370	0.25—0.60	1.50—6.00	
			☪	L	1	MC6115	LP	250—480	0.10—0.40	0.30—2.00	
			☪	L	2	MC6125	LP	275—425	0.10—0.40	0.30—2.00	
			☪	L	3	MC6115	SH	250—480	0.10—0.40	0.30—2.00	
			☪	L	4	MC6125	SH	275—425	0.10—0.40	0.30—2.00	
			☪	L	5	MC6115	SA	250—480	0.10—0.40	0.30—2.00	
			☪	L	6	MC6125	SA	275—425	0.10—0.40	0.30—2.00	
			☪	L	7	MC6115	SW	250—480	0.10—0.50	0.30—2.50	
			☪	L	8	MC6125	SW	275—425	0.10—0.50	0.30—2.50	
			☪	M	1	MC6125	MP	250—390	0.16—0.50	0.30—4.00	
			☪	M	2	MC6115	MP	230—440	0.16—0.50	0.30—4.00	
			☪	M	3	MC6125	MA	250—390	0.20—0.50	0.30—4.00	
			☪	M	4	MC6115	MA	230—440	0.20—0.50	0.30—4.00	
			☪	M	5	MC6125	MH	250—390	0.20—0.55	1.00—4.00	
			☪	M	6	MC6115	MH	230—440	0.20—0.55	1.00—4.00	
			☪	M	7	MC6125	Std	250—390	0.25—0.60	1.50—5.00	
			☪	M	8	MC6115	Std	230—440	0.25—0.60	1.50—5.00	
			☪	M	9	MC6125	MW	250—390	0.20—0.60	0.90—4.00	
			☪	M	10	MC6115	MW	230—440	0.20—0.60	0.90—4.00	
			☪	R	1	MC6125	RP	235—370	0.25—0.60	1.50—6.00	
			☪	R	2	MC6115	RP	215—415	0.25—0.60	1.50—6.00	
			☪	R	3	MC6125	GH	235—370	0.25—0.60	1.50—6.00	
			☪	R	4	MC6115	GH	215—415	0.25—0.60	1.50—6.00	
			☼	L	1	MC6125	LP	275—425	0.10—0.40	0.30—2.00	
			☼	L	2	MC6125	SH	275—425	0.10—0.40	0.30—2.00	
			☼	L	3	MC6125	SA	275—425	0.10—0.40	0.30—2.00	
			☼	M	1	MC6125	MP	250—390	0.16—0.50	0.30—4.00	
			☼	M	2	MC6125	MA	250—390	0.20—0.50	0.30—4.00	
			☼	M	3	MC6125	MH	250—390	0.20—0.55	1.00—4.00	
☼	M	4	MC6125	Std	250—390	0.25—0.60	1.50—5.00				
☼	M	5	MC6125	MW	250—390	0.20—0.60	0.90—4.00				
☼	R	1	MC6125	RP	235—370	0.25—0.60	1.50—6.00				
☼	R	2	MC6125	GH	235—370	0.25—0.60	1.50—6.00				

*Recommended cutting conditions for 5°/7°/11° 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

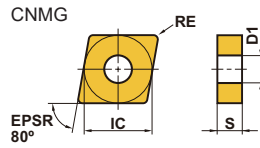
Cutting Area : L : Light Cutting M : Medium Cutting R : Rough Cutting

MC6100 Series

NEW

Negative Inserts (With Hole)

M Class



Light	Light	Light	Light	Medium	Medium
LP	SH	SA	SW (Wiper)	MP	MA
					
Medium	Medium	Medium	Rough	Rough	
MH	Standard	MW (Wiper)	RP	GH	
					

(mm)

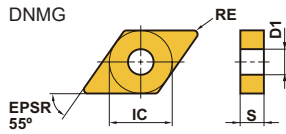
Order Number	Cutting Area	MC6115	MC6125	IC	S	RE	D1
CNMG120404-LP	L	●	●	12.7	4.76	0.4	5.16
CNMG120408-LP	L	●	●	12.7	4.76	0.8	5.16
CNMG120412-LP	L	●	●	12.7	4.76	1.2	5.16
CNMG120404-SH	L	●	●	12.7	4.76	0.4	5.16
CNMG120408-SH	L	●	●	12.7	4.76	0.8	5.16
CNMG120412-SH	L	●	●	12.7	4.76	1.2	5.16
CNMG120404-SA	L	●	●	12.7	4.76	0.4	5.16
CNMG120408-SA	L	●	●	12.7	4.76	0.8	5.16
CNMG120412-SA	L	●	●	12.7	4.76	1.2	5.16
CNMG120404-SW	L	●	●	12.7	4.76	0.4	5.16
CNMG120408-SW	L	●	●	12.7	4.76	0.8	5.16
CNMG120412-SW	L	●	●	12.7	4.76	1.2	5.16
CNMG120404-MP	M	●	●	12.7	4.76	0.4	5.16
CNMG120408-MP	M	●	●	12.7	4.76	0.8	5.16
CNMG120412-MP	M	●	●	12.7	4.76	1.2	5.16
CNMG120416-MP	M	●	●	12.7	4.76	1.6	5.16
CNMG160608-MP	M	●	●	15.875	6.35	0.8	6.35
CNMG160612-MP	M	●	●	15.875	6.35	1.2	6.35
CNMG160616-MP	M	●	●	15.875	6.35	1.6	6.35
CNMG120404-MA	M	●	●	12.7	4.76	0.4	5.16
CNMG120408-MA	M	●	●	12.7	4.76	0.8	5.16
CNMG120412-MA	M	●	●	12.7	4.76	1.2	5.16
CNMG120416-MA	M	●	●	12.7	4.76	1.6	5.16
CNMG160608-MA	M	●	●	15.875	6.35	0.8	6.35
CNMG160612-MA	M	●	●	15.875	6.35	1.2	6.35
CNMG160616-MA	M	●	●	15.875	6.35	1.6	6.35
CNMG190612-MA	M	●	●	19.05	6.35	1.2	7.93
CNMG190616-MA	M	●	●	19.05	6.35	1.6	7.93

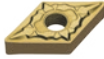
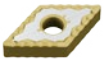
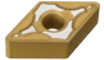
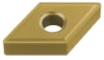
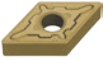
Order Number	Cutting Area	MC6115	MC6125	IC	S	RE	D1
CNMG120404-MH	M	●	●	12.7	4.76	0.4	5.16
CNMG120408-MH	M	●	●	12.7	4.76	0.8	5.16
CNMG120412-MH	M	●	●	12.7	4.76	1.2	5.16
CNMG120416-MH	M	●	●	12.7	4.76	1.6	5.16
CNMG160608-MH	M	●	●	15.875	6.35	0.8	6.35
CNMG160612-MH	M	●	●	15.875	6.35	1.2	6.35
CNMG160616-MH	M	●	●	15.875	6.35	1.6	6.35
CNMG190612-MH	M	●	●	19.05	6.35	1.2	7.93
CNMG190616-MH	M	●	●	19.05	6.35	1.6	7.93
CNMG120404	M	●	●	12.7	4.76	0.4	5.16
CNMG120408	M	●	●	12.7	4.76	0.8	5.16
CNMG120412	M	●	●	12.7	4.76	1.2	5.16
CNMG120416	M	●	●	12.7	4.76	1.6	5.16
CNMG160608	M	●	●	15.875	6.35	0.8	6.35
CNMG160612	M	●	●	15.875	6.35	1.2	6.35
CNMG160616	M	●	●	15.875	6.35	1.6	6.35
CNMG190608	M	●	●	19.05	6.35	0.8	7.93
CNMG190612	M	●	●	19.05	6.35	1.2	7.93
CNMG190616	M	●	●	19.05	6.35	1.6	7.93
CNMG120408-MW	M	●	●	12.7	4.76	0.8	5.16
CNMG120412-MW	M	●	●	12.7	4.76	1.2	5.16
CNMG120408-RP	R	●	●	12.7	4.76	0.8	5.16
CNMG120412-RP	R	●	●	12.7	4.76	1.2	5.16
CNMG120416-RP	R	●	●	12.7	4.76	1.6	5.16
CNMG160612-RP	R	●	●	15.875	6.35	1.2	6.35
CNMG160616-RP	R	●	●	15.875	6.35	1.6	6.35
CNMG190612-RP	R	●	●	19.05	6.35	1.2	7.93
CNMG190616-RP	R	●	●	19.05	6.35	1.6	7.93
CNMG120408-GH	R	●	●	12.7	4.76	0.8	5.16
CNMG120412-GH	R	●	●	12.7	4.76	1.2	5.16
CNMG120416-GH	R	●	●	12.7	4.76	1.6	5.16
CNMG160612-GH	R	●	●	15.875	6.35	1.2	6.35
CNMG160616-GH	R	●	●	15.875	6.35	1.6	6.35
CNMG190612-GH	R	●	●	19.05	6.35	1.2	7.93
CNMG190616-GH	R	●	●	19.05	6.35	1.6	7.93

● = NEW

Negative Inserts (With Hole)

M Class



Light	Light	Light			
LP	SH	SA			
					
Medium	Medium	Medium	Medium	Rough	Rough
MP	MA	MH	Standard	RP	GH
					

(mm)

Order Number	Cutting Area	MC6115	MC6125	IC	S	RE	D1
DNMG150404-LP	L	●	●	12.7	4.76	0.4	5.16
DNMG150408-LP	L	●	●	12.7	4.76	0.8	5.16
DNMG150412-LP	L	●	●	12.7	4.76	1.2	5.16
DNMG150604-LP	L	●	●	12.7	6.35	0.4	5.16
DNMG150608-LP	L	●	●	12.7	6.35	0.8	5.16
DNMG150612-LP	L	●	●	12.7	6.35	1.2	5.16
DNMG150404-SH	L	●	●	12.7	4.76	0.4	5.16
DNMG150408-SH	L	●	●	12.7	4.76	0.8	5.16
DNMG150412-SH	L	●	●	12.7	4.76	1.2	5.16
DNMG150604-SH	L	●	●	12.7	6.35	0.4	5.16
DNMG150608-SH	L	●	●	12.7	6.35	0.8	5.16
DNMG150612-SH	L	●	●	12.7	6.35	1.2	5.16
DNMG150404-SA	L	●	●	12.7	4.76	0.4	5.16
DNMG150408-SA	L	●	●	12.7	4.76	0.8	5.16
DNMG150412-SA	L	●	●	12.7	4.76	1.2	5.16
DNMG150604-SA	L	●	●	12.7	6.35	0.4	5.16
DNMG150608-SA	L	●	●	12.7	6.35	0.8	5.16
DNMG150612-SA	L	●	●	12.7	6.35	1.2	5.16

Order Number	Cutting Area	MC6115	MC6125	IC	S	RE	D1
DNMG150404-MP	M	●	●	12.7	4.76	0.4	5.16
DNMG150408-MP	M	●	●	12.7	4.76	0.8	5.16
DNMG150412-MP	M	●	●	12.7	4.76	1.2	5.16
DNMG150416-MP	M	●	●	12.7	4.76	1.6	5.16
DNMG150604-MP	M	●	●	12.7	6.35	0.4	5.16
DNMG150608-MP	M	●	●	12.7	6.35	0.8	5.16
DNMG150612-MP	M	●	●	12.7	6.35	1.2	5.16
DNMG150616-MP	M	●	●	12.7	6.35	1.6	5.16
DNMG150404-MA	M	●	●	12.7	4.76	0.4	5.16
DNMG150408-MA	M	●	●	12.7	4.76	0.8	5.16
DNMG150412-MA	M	●	●	12.7	4.76	1.2	5.16
DNMG150604-MA	M	●	●	12.7	6.35	0.4	5.16
DNMG150608-MA	M	●	●	12.7	6.35	0.8	5.16
DNMG150612-MA	M	●	●	12.7	6.35	1.2	5.16
DNMG150404-MH	M	●	●	12.7	4.76	0.4	5.16
DNMG150408-MH	M	●	●	12.7	4.76	0.8	5.16
DNMG150412-MH	M	●	●	12.7	4.76	1.2	5.16
DNMG150604-MH	M	●	●	12.7	6.35	0.4	5.16
DNMG150608-MH	M	●	●	12.7	6.35	0.8	5.16
DNMG150612-MH	M	●	●	12.7	6.35	1.2	5.16
DNMG150404	M	●	●	12.7	4.76	0.4	5.16
DNMG150408	M	●	●	12.7	4.76	0.8	5.16
DNMG150412	M	●	●	12.7	4.76	1.2	5.16
DNMG150604	M	●	●	12.7	6.35	0.4	5.16
DNMG150608	M	●	●	12.7	6.35	0.8	5.16
DNMG150612	M	●	●	12.7	6.35	1.2	5.16
DNMG150408-RP	R	●	●	12.7	4.76	0.8	5.16
DNMG150412-RP	R	●	●	12.7	4.76	1.2	5.16
DNMG150416-RP	R	●	●	12.7	4.76	1.6	5.16
DNMG150608-RP	R	●	●	12.7	6.35	0.8	5.16
DNMG150612-RP	R	●	●	12.7	6.35	1.2	5.16
DNMG150616-RP	R	●	●	12.7	6.35	1.6	5.16
DNMG150408-GH	R	●	●	12.7	4.76	0.8	5.16
DNMG150412-GH	R	●	●	12.7	4.76	1.2	5.16
DNMG150608-GH	R	●	●	12.7	6.35	0.8	5.16
DNMG150612-GH	R	●	●	12.7	6.35	1.2	5.16

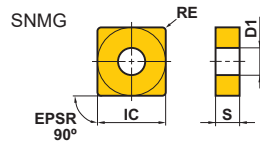
● = NEW

MC6100 Series

NEW

Negative Inserts (With Hole)

M Class



Light	Light	Light			
LP	SH	SA			
Medium	Medium	Medium	Medium	Rough	Rough
MP	MA	MH	Standard	RP	GH

(mm)

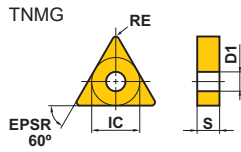
Order Number	Cutting Area	MC6115	MC6125	IC	S	RE	D1
SNMG120404-LP	L	●	●	12.7	4.76	0.4	5.16
SNMG120408-LP	L	●	●	12.7	4.76	0.8	5.16
SNMG120412-LP	L	●	●	12.7	4.76	1.2	5.16
SNMG120408-SH	L	●	●	12.7	4.76	0.8	5.16
SNMG120408-SA	L	●	●	12.7	4.76	0.8	5.16

Order Number	Cutting Area	MC6115	MC6125	IC	S	RE	D1
SNMG120404-MP	M	●	●	12.7	4.76	0.4	5.16
SNMG120408-MP	M	●	●	12.7	4.76	0.8	5.16
SNMG120412-MP	M	●	●	12.7	4.76	1.2	5.16
SNMG120404-MA	M	●	●	12.7	4.76	0.4	5.16
SNMG120408-MA	M	●	●	12.7	4.76	0.8	5.16
SNMG120412-MA	M	●	●	12.7	4.76	1.2	5.16
SNMG150608-MA	M	●	●	15.875	6.35	0.8	6.35
SNMG150612-MA	M	●	●	15.875	6.35	1.2	6.35
SNMG190612-MA	M	●	●	19.05	6.35	1.2	7.93
SNMG190616-MA	M	●	●	19.05	6.35	1.6	7.93
SNMG120408-MH	M	●	●	12.7	4.76	0.8	5.16
SNMG120412-MH	M	●	●	12.7	4.76	1.2	5.16
SNMG190612-MH	M	●	●	19.05	6.35	1.2	7.93
SNMG190616-MH	M	●	●	19.05	6.35	1.6	7.93
SNMG120404	M	●	●	12.7	4.76	0.4	5.16
SNMG120408	M	●	●	12.7	4.76	0.8	5.16
SNMG120412	M	●	●	12.7	4.76	1.2	5.16
SNMG150612	M	●	●	15.875	6.35	1.2	6.35
SNMG190612	M	●	●	19.05	6.35	1.2	7.93
SNMG190616	M	●	●	19.05	6.35	1.6	7.93
SNMG120408-RP	R	●	●	12.7	4.76	0.8	5.16
SNMG120412-RP	R	●	●	12.7	4.76	1.2	5.16
SNMG120416-RP	R	●	●	12.7	4.76	1.6	5.16
SNMG150612-RP	R	●	●	15.875	6.35	1.2	6.35
SNMG150616-RP	R	●	●	15.875	6.35	1.6	6.35
SNMG190612-RP	R	●	●	19.05	6.35	1.2	7.93
SNMG190616-RP	R	●	●	19.05	6.35	1.6	7.93
SNMG120408-GH	R	●	●	12.7	4.76	0.8	5.16
SNMG120412-GH	R	●	●	12.7	4.76	1.2	5.16
SNMG120416-GH	R	●	●	12.7	4.76	1.6	5.16
SNMG150612-GH	R	●	●	15.875	6.35	1.2	6.35
SNMG190612-GH	R	●	●	19.05	6.35	1.2	7.93
SNMG190616-GH	R	●	●	19.05	6.35	1.6	7.93

● = NEW

Negative Inserts (With Hole)

M Class



Light	Light	Light			
LP	SH	SA			
Medium	Medium	Medium	Medium	Rough	Rough
MP	MA	MH	Standard	RP	GH

(mm)

Order Number	Cutting Area	MC6115	MC6125	IC	S	RE	D1
TNMG160404-LP	L	●	●	9.525	4.76	0.4	3.81
TNMG160408-LP	L	●	●	9.525	4.76	0.8	3.81
TNMG160412-LP	L	●	●	9.525	4.76	1.2	3.81
TNMG220408-LP	L	●	●	12.7	4.76	0.8	5.16
TNMG220412-LP	L	●	●	12.7	4.76	1.2	5.16
TNMG160404-SH	L	●	●	9.525	4.76	0.4	3.81
TNMG160408-SH	L	●	●	9.525	4.76	0.8	3.81
TNMG220408-SH	L	●	●	12.7	4.76	0.8	5.16
TNMG160404-SA	L	●	●	9.525	4.76	0.4	3.81
TNMG160408-SA	L	●	●	9.525	4.76	0.8	3.81
TNMG160412-SA	L	●	●	9.525	4.76	1.2	3.81
TNMG220408-SA	L	●	●	12.7	4.76	0.8	5.16

Order Number	Cutting Area	MC6115	MC6125	IC	S	RE	D1
TNMG160404-MP	M	●	●	9.525	4.76	0.4	3.81
TNMG160408-MP	M	●	●	9.525	4.76	0.8	3.81
TNMG160412-MP	M	●	●	9.525	4.76	1.2	3.81
TNMG220408-MP	M	●	●	12.7	4.76	0.8	5.16
TNMG220412-MP	M	●	●	12.7	4.76	1.2	5.16
TNMG160404-MA	M	●	●	9.525	4.76	0.4	3.81
TNMG160408-MA	M	●	●	9.525	4.76	0.8	3.81
TNMG160412-MA	M	●	●	9.525	4.76	1.2	3.81
TNMG220408-MA	M	●	●	12.7	4.76	0.8	5.16
TNMG220412-MA	M	●	●	12.7	4.76	1.2	5.16
TNMG270608-MA	M	●	●	15.875	6.35	0.8	6.35
TNMG270612-MA	M	●	●	15.875	6.35	1.2	6.35
TNMG160404-MH	M	●	●	9.525	4.76	0.4	3.81
TNMG160408-MH	M	●	●	9.525	4.76	0.8	3.81
TNMG160412-MH	M	●	●	9.525	4.76	1.2	3.81
TNMG220408-MH	M	●	●	12.7	4.76	0.8	5.16
TNMG220412-MH	M	●	●	12.7	4.76	1.2	5.16
TNMG160404	M	●	●	9.525	4.76	0.4	3.81
TNMG160408	M	●	●	9.525	4.76	0.8	3.81
TNMG160412	M	●	●	9.525	4.76	1.2	3.81
TNMG220404	M	●	●	12.7	4.76	0.4	5.16
TNMG220408	M	●	●	12.7	4.76	0.8	5.16
TNMG220412	M	●	●	12.7	4.76	1.2	5.16
TNMG160408-RP	R	●	●	9.525	4.76	0.8	3.81
TNMG160412-RP	R	●	●	9.525	4.76	1.2	3.81
TNMG220408-RP	R	●	●	12.7	4.76	0.8	5.16
TNMG220412-RP	R	●	●	12.7	4.76	1.2	5.16
TNMG220416-RP	R	●	●	12.7	4.76	1.6	5.16
TNMG270612-RP	R	●	●	15.875	6.35	1.2	6.35
TNMG270616-RP	R	●	●	15.875	6.35	1.6	6.35
TNMG160408-GH	R	●	●	9.525	4.76	0.8	3.81
TNMG160412-GH	R	●	●	9.525	4.76	1.2	3.81
TNMG220408-GH	R	●	●	12.7	4.76	0.8	5.16
TNMG220412-GH	R	●	●	12.7	4.76	1.2	5.16
TNMG220416-GH	R	●	●	12.7	4.76	1.6	5.16
TNMG270612-GH	R	●	●	15.875	6.35	1.2	6.35
TNMG270616-GH	R	●	●	15.875	6.35	1.6	6.35

● = NEW

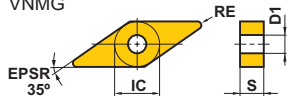
MC6100 Series

NEW

Negative Inserts (With Hole)

M Class

VNMG



Light	Light		
LP	SH		
Medium	Medium	Medium	Medium
MP	MA	MH	Standard

(mm)

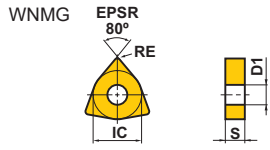
Order Number	Cutting Area	MC6115	MC6125	IC	S	RE	D1
VNMG160404-LP	L	●	●	9.525	4.76	0.4	3.81
VNMG160408-LP	L	●	●	9.525	4.76	0.8	3.81
VNMG160404-SH	L	●	●	9.525	4.76	0.4	3.81
VNMG160408-SH	L	●	●	9.525	4.76	0.8	3.81

Order Number	Cutting Area	MC6115	MC6125	IC	S	RE	D1
VNMG160404-MP	M	●	●	9.525	4.76	0.4	3.81
VNMG160408-MP	M	●	●	9.525	4.76	0.8	3.81
VNMG160412-MP	M	●	●	9.525	4.76	1.2	3.81
VNMG160404-MA	M	●	●	9.525	4.76	0.4	3.81
VNMG160408-MA	M	●	●	9.525	4.76	0.8	3.81
VNMG160404-MH	M	●	●	9.525	4.76	0.4	3.81
VNMG160408-MH	M	●	●	9.525	4.76	0.8	3.81
VNMG160404	M	●	●	9.525	4.76	0.4	3.81
VNMG160408	M	●	●	9.525	4.76	0.8	3.81
VNMG160412	M	●	●	9.525	4.76	1.2	3.81

● = NEW

Negative Inserts (With Hole)

M Class



Light	Light	Light	Light	Medium	Medium
LP	SH	SA	SW (Wiper)	MP	MA
					
Medium	Medium	Medium	Rough	Rough	
MH	Standard	MW (Wiper)	RP	GH	
					

(mm)

Order Number	Cutting Area	MC6115	MC6125	IC	S	RE	D1
WNMG080404-LP	L	●	●	12.7	4.76	0.4	5.16
WNMG080408-LP	L	●	●	12.7	4.76	0.8	5.16
WNMG080412-LP	L	●	●	12.7	4.76	1.2	5.16
WNMG080404-SH	L	●	●	12.7	4.76	0.4	5.16
WNMG080408-SH	L	●	●	12.7	4.76	0.8	5.16
WNMG080412-SH	L	●	●	12.7	4.76	1.2	5.16
WNMG080404-SA	L	●	●	12.7	4.76	0.4	5.16
WNMG080408-SA	L	●	●	12.7	4.76	0.8	5.16
WNMG080412-SA	L	●	●	12.7	4.76	1.2	5.16
WNMG080404-SW	L	●	●	12.7	4.76	0.4	5.16
WNMG080408-SW	L	●	●	12.7	4.76	0.8	5.16
WNMG080412-SW	L	●	●	12.7	4.76	1.2	5.16
WNMG080404-MP	M	●	●	12.7	4.76	0.4	5.16
WNMG080408-MP	M	●	●	12.7	4.76	0.8	5.16
WNMG080412-MP	M	●	●	12.7	4.76	1.2	5.16
WNMG080416-MP	M	●	●	12.7	4.76	1.6	5.16
WNMG080404-MA	M	●	●	12.7	4.76	0.4	5.16
WNMG080408-MA	M	●	●	12.7	4.76	0.8	5.16
WNMG080412-MA	M	●	●	12.7	4.76	1.2	5.16
WNMG080416-MA	M	●	●	12.7	4.76	1.6	5.16

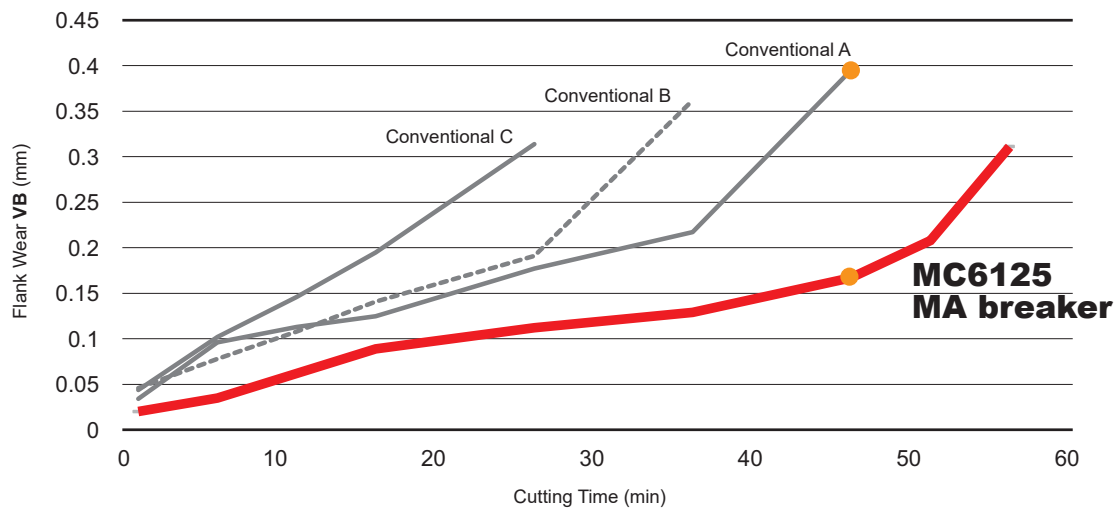
Order Number	Cutting Area	MC6115	MC6125	IC	S	RE	D1
WNMG080404-MH	M	●	●	12.7	4.76	0.4	5.16
WNMG080408-MH	M	●	●	12.7	4.76	0.8	5.16
WNMG080412-MH	M	●	●	12.7	4.76	1.2	5.16
WNMG080404	M	●	●	12.7	4.76	0.4	5.16
WNMG080408	M	●	●	12.7	4.76	0.8	5.16
WNMG080412	M	●	●	12.7	4.76	1.2	5.16
WNMG080408-MW	M	●	●	12.7	4.76	0.8	5.16
WNMG080412-MW	M	●	●	12.7	4.76	1.2	5.16
WNMG080408-RP	R	●	●	12.7	4.76	0.8	5.16
WNMG080412-RP	R	●	●	12.7	4.76	1.2	5.16
WNMG080408-GH	R	●	●	12.7	4.76	0.8	5.16
WNMG080412-GH	R	●	●	12.7	4.76	1.2	5.16

● = NEW

Cutting Performance

Machining SCr420H : Comparison of Wear Resistance During Continuous Wet Cutting

The thick coating exclusively for MC6125 highly suppresses early wear.



**MC6125
MA Br**

46 min.

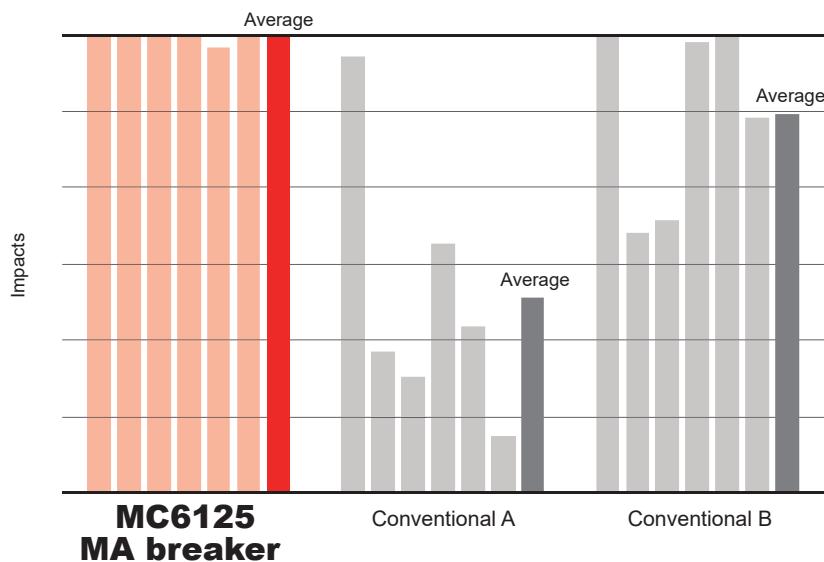


Conventional A 46 min.

<Cutting Conditions>
 Work Material : JIS SCr420H
 Inserts : CNMG120408-
 Cutting Speed : $v_c = 300 \text{ m/min}$
 Feed per Rev. : $f = 0.3 \text{ mm/rev}$
 Depth of Cut : $a_p = 1.5 \text{ mm}$
 Cutting Mode : Wet Cutting

Comparison of Toughness During Interrupted Cutting

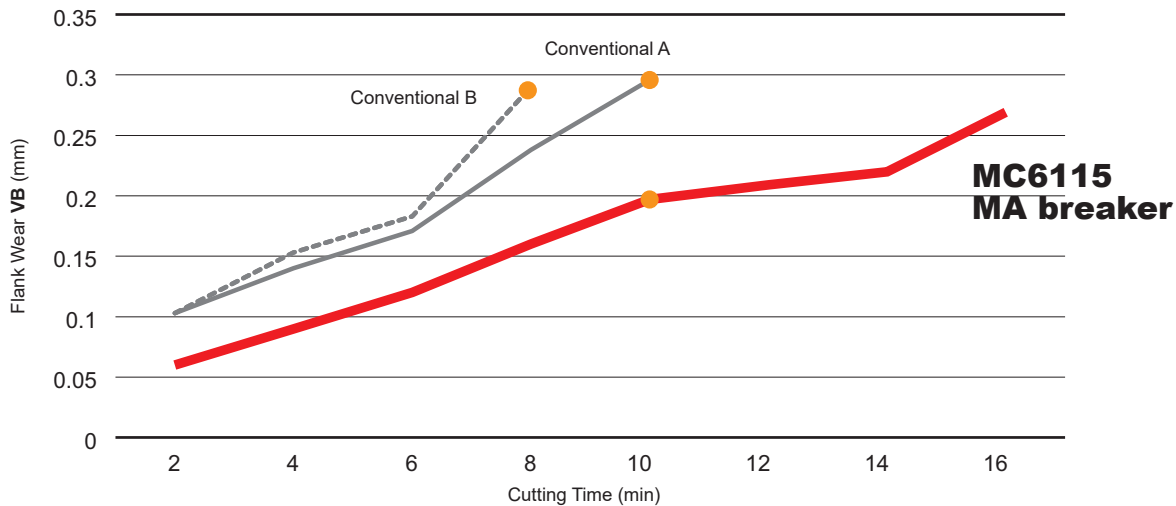
Provides stable cutting under severe cutting conditions that are likely to cause sudden fracturing.



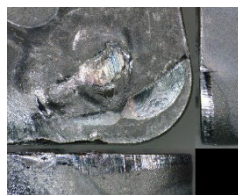
<Cutting Conditions>
 Work Material : JIS SCM440
 Inserts : CNMG120408-
 Cutting Speed : $v_c = 200 \text{ m/min}$
 Feed per Rev. : $f = 0.25 \text{ mm/rev}$
 Depth of Cut : $a_p = 1.5 \text{ mm}$
 Cutting Mode : Wet Cutting

Machining S45C : Comparison of Wear Resistance During Continuous Dry Cutting

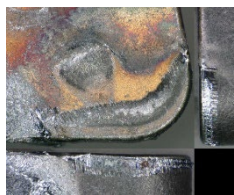
The "Super" Nano Texture Technology increases tool life even when dry cutting by suppressing crater wear.



MC6115 10 min.



Conventional A 10 min.

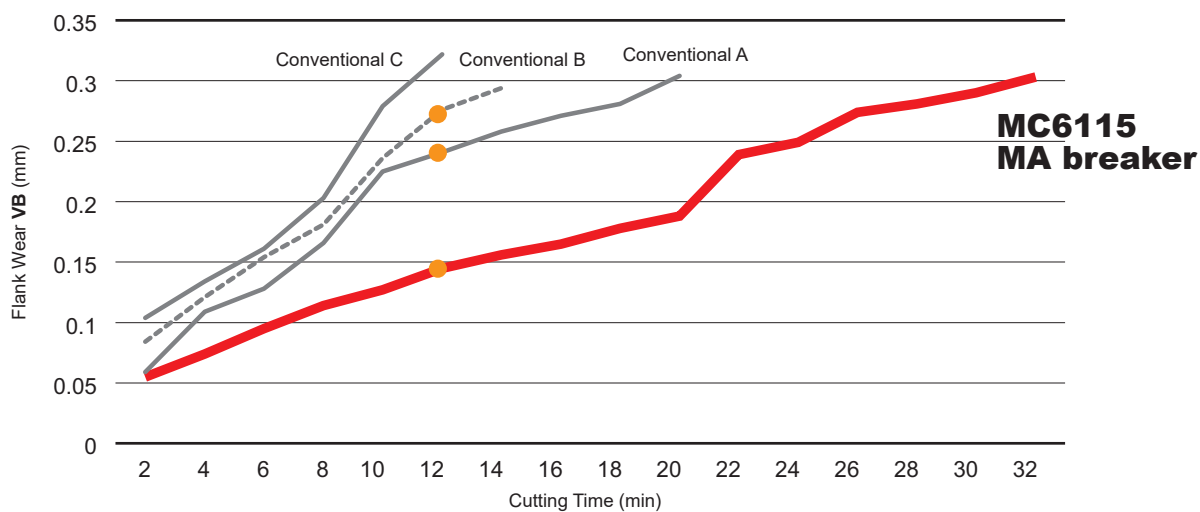


Conventional B 8 min.

<Cutting Conditions>
 Work Material : JIS S45C
 Inserts : CNMG120408-
 Cutting Speed : $v_c=300$ m/min
 Feed per Rev. : $f=0.3$ mm/rev
 Depth of Cut : $a_p=1.5$ mm
 Cutting Mode : Dry Cutting

Machining SUJ2 : Comparison of Wear Resistance During Continuous Wet Cutting

The thick coating provides high flank wear resistance.



MC6115 12 min.



Conventional A 12 min.



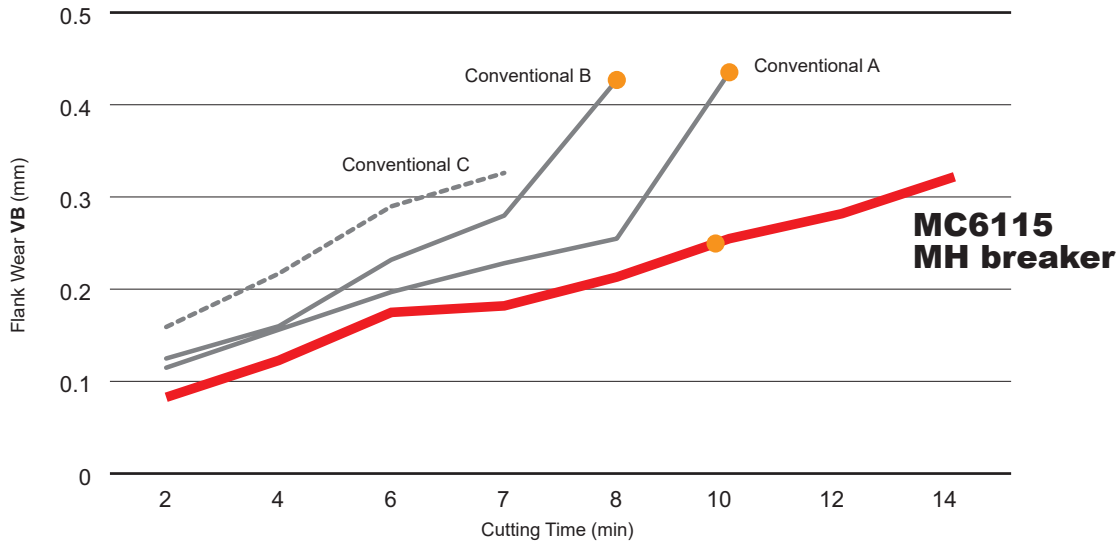
Conventional B 12 min.

<Cutting Conditions>
 Work Material : JIS SUJ2
 Inserts : CNMG120408-
 Cutting Speed : $v_c=300$ m/min
 Feed per Rev. : $f=0.3$ mm/rev
 Depth of Cut : $a_p=1.5$ mm
 Cutting Mode : Wet Cutting

Cutting Performance

Machining SCM440 : Comparison of Wear Resistance During Continuous Wet Cutting

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



MC6115 10 min.



Conventional A 10 min.

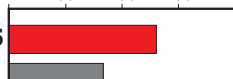


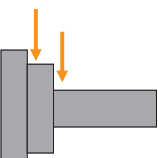
Conventional B 8 min.

<Cutting Conditions>
 Work Material : JIS SCM440
 Inserts : CNMG120408-
 Cutting Speed : $v_c = 350 \text{ m/min}$
 Feed per Rev. : $f = 0.3 \text{ mm/rev}$
 Depth of Cut : $a_p = 1.5 \text{ mm}$
 Cutting Mode : Wet Cutting

Examples of Usage

Insert		CNMG120408-MA	WNMG080408-MP
Workpiece Material	JIS S45C		Carbon Steel
			
Component		Hex Bar Parts	Automotive Parts
Application		Interrupted Finish Turning	External Turning and Facing
Cutting Conditions	Cutting Speed v_c (m/min)	150	80
	Feed per Rev. f (mm/rev)	0.2	0.1-0.5
	Depth of Cut a_p (mm)	2.0, 1.6	0.5
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.

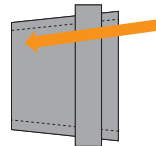
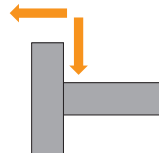
Insert		DNMG150412-SH	CNMG120408-MH
Workpiece Material	JIS S53C		General Structural Steel
			
Component		—	Hun Parts
Application		Interrupted Finish Turning	Face Turning
Cutting Conditions	Cutting Speed v_c (m/min)	200	200→240
	Feed per Rev. f (mm/rev)	0.3	0.25
	Depth of Cut a_p (mm)	1.2	2.0
Cutting 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.

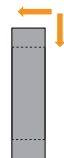
Insert		CNMG120412-RP
Workpiece Material	JIS SCM435	
		
Component		Flange Parts
Application		External Turning and Facing
Cutting Conditions	Cutting Speed v_c (m/min)	200
	Feed per Rev. f (mm/rev)	0.25
	Depth of Cut a_p (mm)	1.5
Cutting Mode		Wet Cutting
Results	Number of Workpieces 50 100 MC6125  Conventional  Conventional products machined an inconsistent number of components. MC6125 was more consistent and improved tool life.	

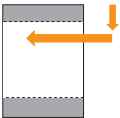
The application examples are from customers workpieces and can therefore differ from the recommended cutting conditions.

CVD Coated Grade for Steel Turning

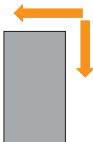
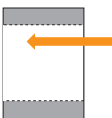
Examples of Usage

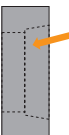
Insert		CNMG120408-MA	WNMG080408-MA	
Workpiece Material				
Component		Heavy Machinery Parts	Automotive Parts	
Application		Internal Turning	External Face Turning	
Cutting Conditions	Cutting Speed v_c (m/min)	150	290	
	Feed per Rev. f (mm/rev)	0.3	0.25	
	Depth of Cut a_p (mm)	1.5	1.0	
Cutting Mode		Wet Cutting	Wet Cutting	
Results	Number of Workpieces 123 MC6115 Conventional Tool life increased x 1.5 on a large workpiece (inner diameter 430 mm)		Number of Workpieces 204060 MC6115 Conventional The excellent wear resistance of MC6115 helped achieve double tool life.	

Insert		WNMG080408-MA	WNMG080412-MP	
Workpiece Material	JIS SUJ2		JIS SCr420H	
Component		Bearing Parts	Machine Parts	
Application		External Face Turning	Face Turning	
Cutting Conditions	Cutting Speed v_c (m/min)	198-278	235	
	Feed per Rev. f (mm/rev)	0.21-0.3	0.35	
	Depth of Cut a_p (mm)	1.0	1.0	
	Cutting Mode	Wet Cutting	Wet Cutting	
Results	Number of Workpieces 100200300 MC6115 Conventional The excellent wear resistance of MC6115 helped achieve double tool life.		Number of Workpieces 100200300 MC6115 Conventional MC6115 achieved longer tool life compared to a conventional product.	

Insert		WNMG080408-MP	WNMG080416-MA	
Workpiece Material	JIS SCr440		JIS S50C	
Component		Hub	Joint Parts	
Application		External Turning and Facing	Internal Turning and Facing	
Cutting Conditions	Cutting Speed v_c (m/min)	300	215	
	Feed per Rev. f (mm/rev)	0.25-0.35	0.25-0.27	
	Depth of Cut a_p (mm)	1-2.5	3.15	
Cutting Mode		Wet Cutting	Wet Cutting	
Results	Number of Workpieces 100 200 300 MC6115  Conventional  Superior wear resistance compared to conventional products meant tool life was extended.		Number of Workpieces 50 150 250 350 MC6115  Conventional  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		DNMG150612-SA	CNMG120408-MP
Workpiece Material	Bearing Steel		JIS SCr440
			
Component		Bearing Parts	Shaft Parts
Application		External Turning and Facing	Internal Turning
Cutting Conditions	Cutting Speed v_c (m/min)	260	280
	Feed per Rev. f (mm/rev)	0.3-0.35	0.29
	Depth of Cut a_p (mm)	0.5	2.5
Cutting Mode		Wet Cutting	Wet Cutting
Results		Number of Workpieces 50 100 150 200 250 MC6115  Conventional  Extreme resistance to chipping achieved 150% tool life and enabled easy identification of wear.	Number of Workpieces 50 150 250 350 MC6115  Conventional  Number of components machined increased by 50% due to improved wear resistance.

Insert		WNNMG080408-MP
Workpiece Material	Heated Tool Steel	
		
Component		Die Casting Parts
Application		Internal Turning
Cutting Conditions	Cutting Speed v_c (m/min)	160
	Feed per Rev. f (mm/rev)	0.25
	Depth of Cut a_p (mm)	2.0
Cutting Mode		Wet Cutting
Results		Number of Workpieces 1 2 3 4 MC6115  Conventional  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.

This image shows a full page of a document template designed for writing. At the top left, there is a header area containing the word "Memo" in a large, bold, black font. A solid dark grey horizontal bar runs across the entire width of the page directly beneath the header. The main body of the page is filled with numerous thin, light grey horizontal lines spaced evenly apart, providing a guide for handwriting or typing. The overall design is clean and minimalist.



CVD Coated Grade for Steel Turning

MC6100 Series

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(Tools specifications subject to change without notice.)