DIA EDGE
TOOL NEWS
2024.4 Update
B269G

CVD Coated Grades for Cast Iron Turning

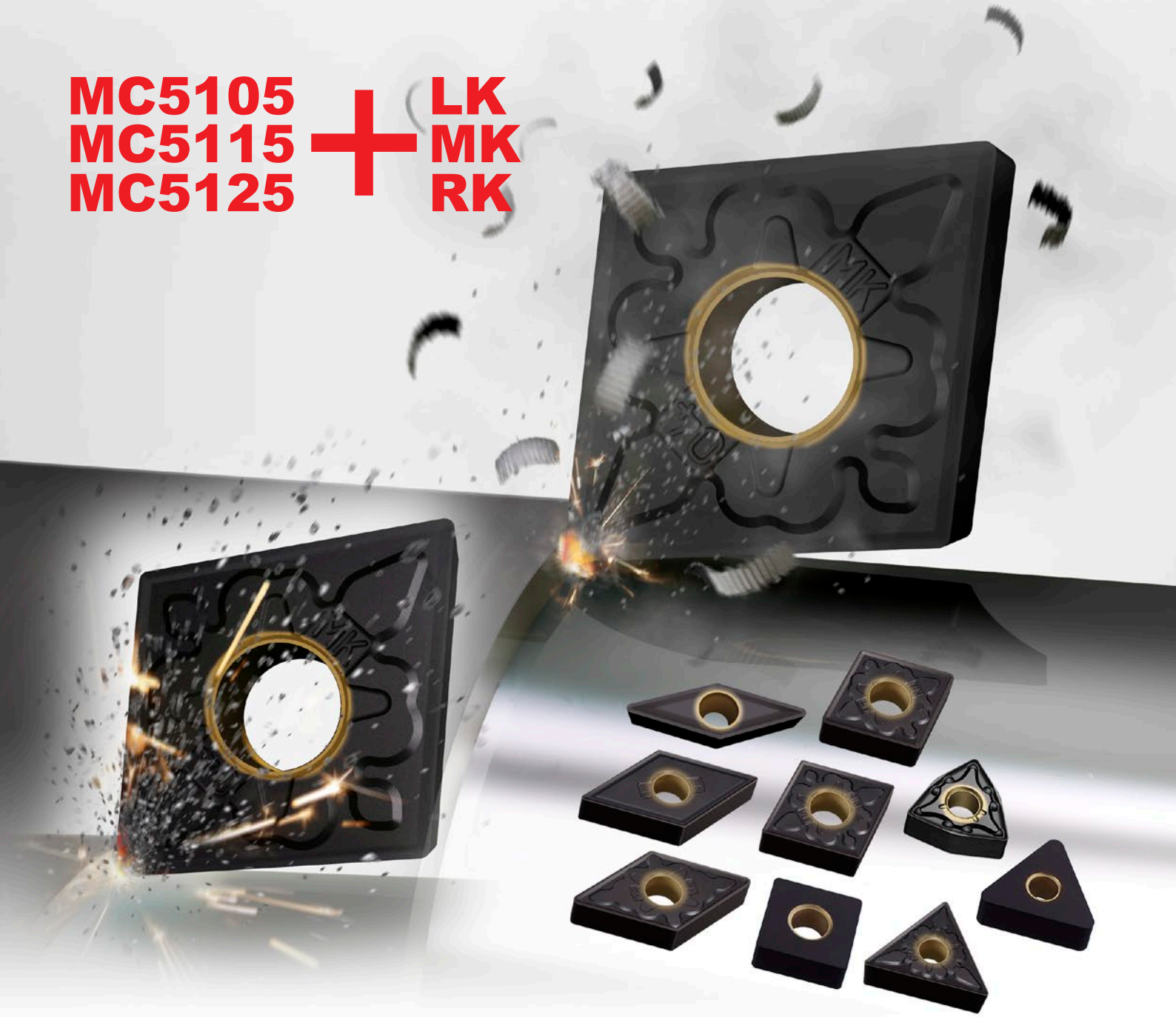
Environmentally Friendly Product

MC5100 Series

Item Expansion

The ideal grades for a wide range of applications from high speed through to interrupted turning.

MC5105
MC5115
MC5125
+
LK
MK
RK



MITSUBISHI MATERIALS CORPORATION

CVD Coated Grades for Cast Iron Turning

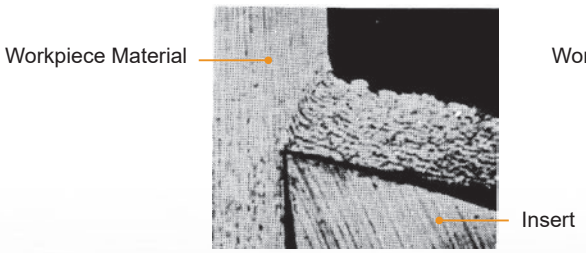
MC5100 Series

Please refer to the last page for more information on certified environmentally friendly products.

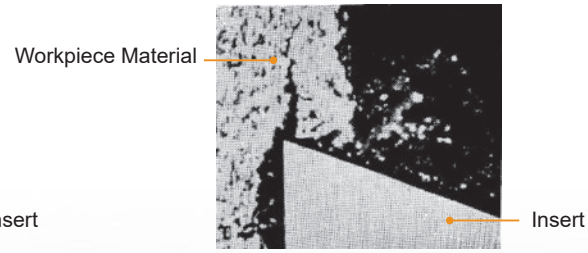
A choice of different grades ideally suited to all types of cast iron machining.

The process of casting iron enables complex geometries to be formed in the component that is produced. Different types of cast irons produce different chips when machined and can cause various types of damage to an insert. The complex shapes produced in castings also creates challenges when machining and can vary from continuous to interrupted cutting. In response to these challenges, Mitsubishi Materials has created a series of grades that are able to successfully machine all types of cast iron materials and component geometries.

Chip morphology of cast iron



Ductile Cast Iron
Continuous Type

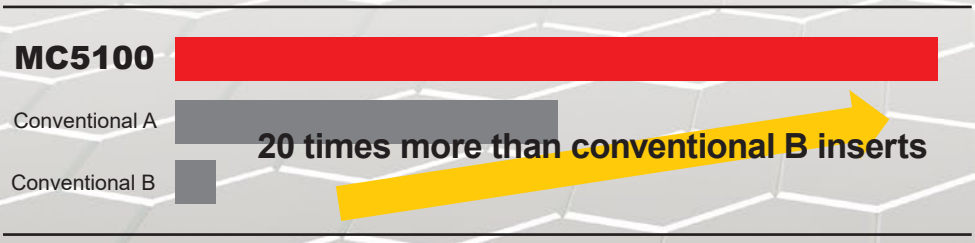


Gray Cast Iron
Crack Type

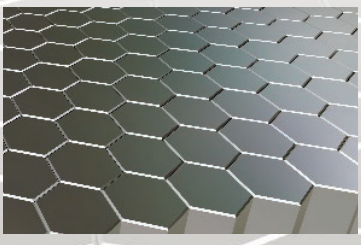
Features

"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.

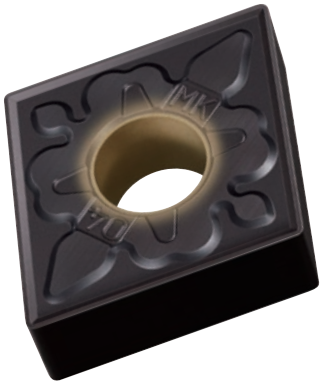
"Super" Nano Texture

Uniformity of the growth direction has drastically improved.

For high speed cutting of gray cast iron

MC5105

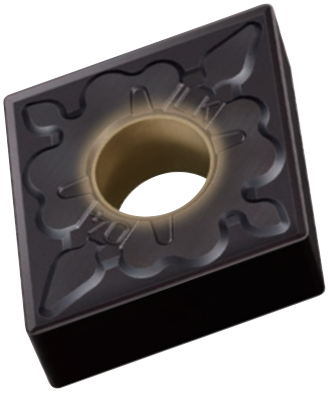
Provides outstanding wear resistance when turning gray cast iron at up to 1000 m/min cutting speeds.



First recommended grade for ductile cast iron

MC5115

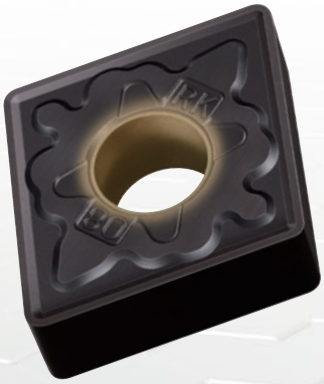
Prevents abnormal cutting edge damage and displays excellent wear and fracture resistance when machining ductile cast iron.



For heavy interrupted cutting of ductile cast iron

MC5125

Demonstrates excellent fracture resistance that can withstand heavy interrupted cutting of high strength ductile cast iron.



From the Developers

Since gray cast iron tends to be machined at high speeds (500-1000 m/min), it is important to make the Al_2O_3 film coating as strong as possible in order to ensure wear resistance. The focus was on the formation of crystals and the improvement of the intermediate layer of the coating. The coating has also been adjusted to provide excellent intermittent performance despite using a harder carbide substrate compared to conventional products.

Ductile cast iron is machined at relative low speeds (100-300 m/min) and TiCN has a higher hardness.
As for the intermittent cutting performance. it was difficult to identify the cause of the edge chipping, but the investigation results revealed that the peeling of the coating was the cause of chipping so a stronger adhesion layer was introduced.

The MC5100 series has been expanded to include grades that are optimal for each type of cast iron turning.
These grades will become an indispensable tool for customers that machine cast iron materials.

Tough and Sub Grip Layers for Ductile Cast Iron Grades

The extra strength of the adhesion between the coating layers (1.3 times stronger) suppresses peeling during machining of ductile cast iron.

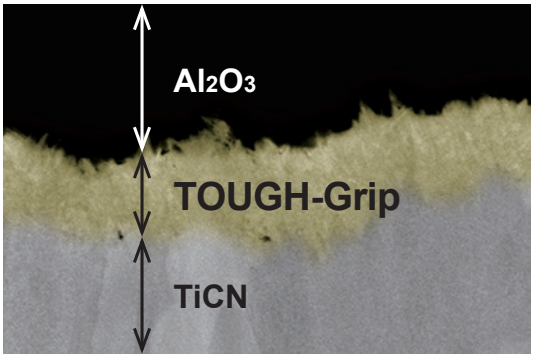
Adhesion is 1.3 Times* Greater!

*Compared with a conventional Mitsubishi product.

MC5115

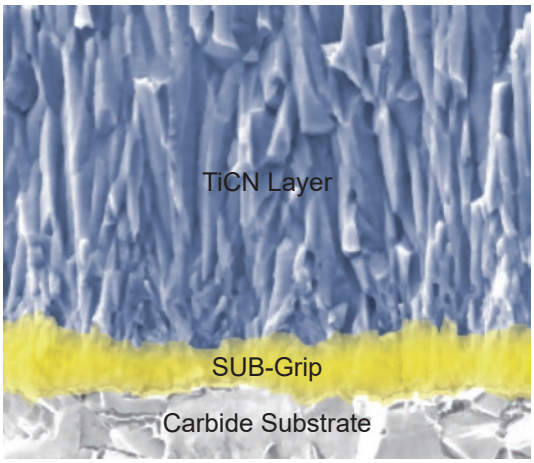
TOUGH-Grip

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



SUB-Grip

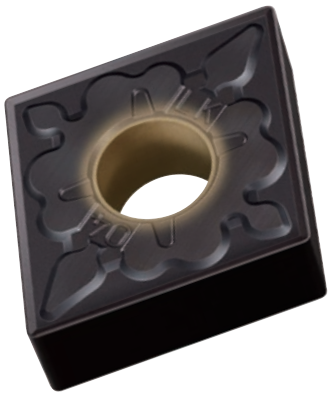
By increasing the degree of adhesion between the carbide substrate and the coating layer, a coating layer has been developed that is resistant to peeling even during strong intermittent machining.



By Image

For high speed cutting of gray cast iron

MC5105



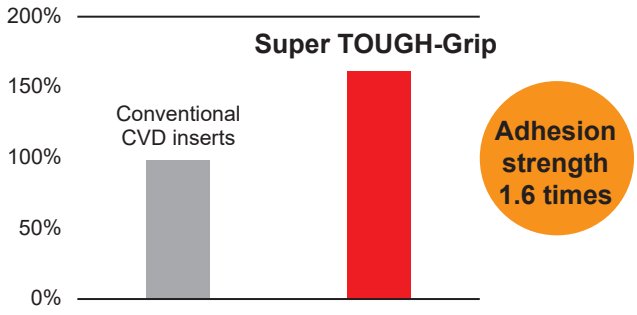
Harder and With Outstanding Wear Resistance

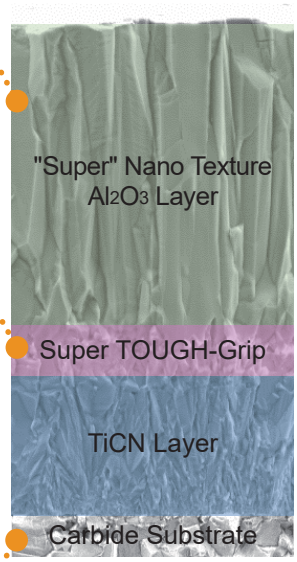
A thick top coating layer

Intermediate layer suitable for high speed cutting

Adhesion Strength Evaluation*

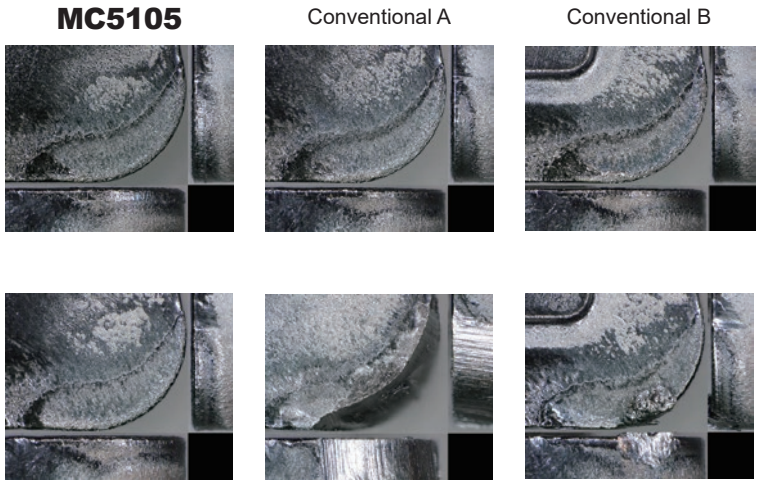
*Adhesion strength measurement is obtained from a scratch test that records the force needed to peel the coating layers.





The substrate adopts a high hardness carbide material

Wear resistance comparison when machining of FC300 at cutting speeds of 1000 m/min

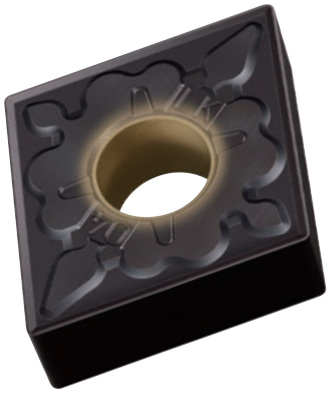


<Cutting Conditions>

Workpiece Material	: JIS FC300
Inserts	: CNMA120412
Cutting Speed	: vc = 1000 m/min
Feed per Rev.	: f =0.3 mm/rev
Depth of Cut	: ap = 2.0 mm
Cutting Mode	: Dry Cutting

First recommended grade
for ductile cast iron

MC5115



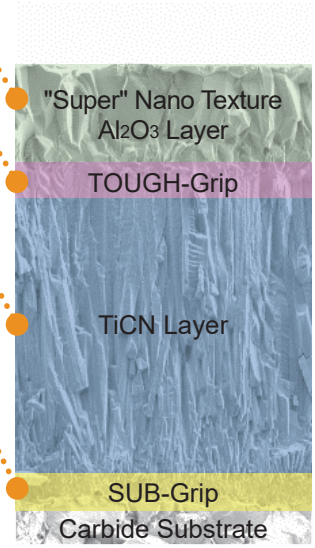
Excellent Durability and Resistance to Impacts

Al_2O_3 layer with excellent wear resistance

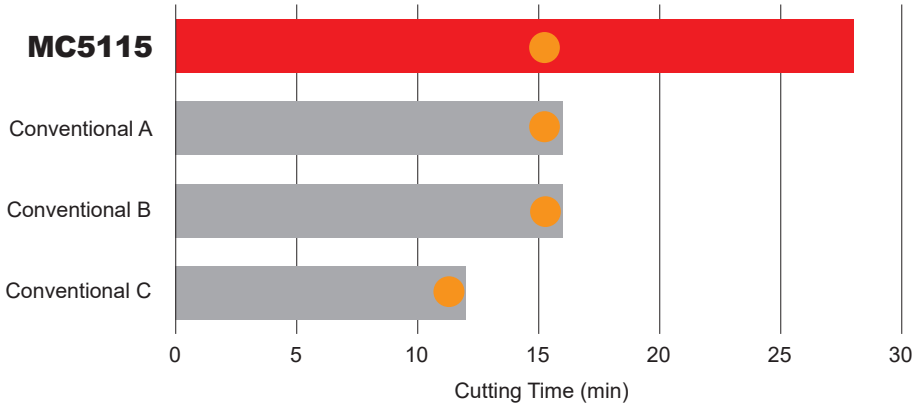
Intermediate layer with microstructure suitable for ductile cast iron

Thick TiCN layer suitable for coping with the hardness of ductile cast iron

New adhesion layer with an enhanced resistance to peeling



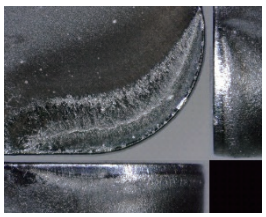
Comparison of wear resistance during continuous cutting of FCD700



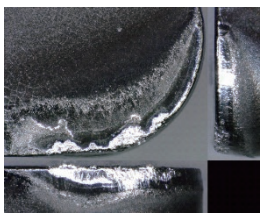
<Cutting Conditions>

Workpiece Material	: JIS FCD700
Inserts	: CNMA120412
Cutting Speed	: vc = 250 m/min
Feed per Rev.	: f =0.3 mm/rev
Depth of Cut	: ap = 2.0 mm
Cutting Mode	: Wet Cutting

After machining for 16 minutes

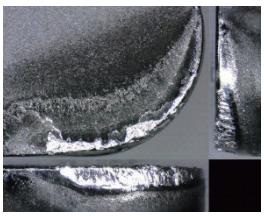


MC5115

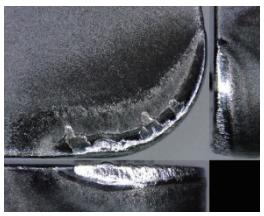


Conventional A

After machining for 12 minutes



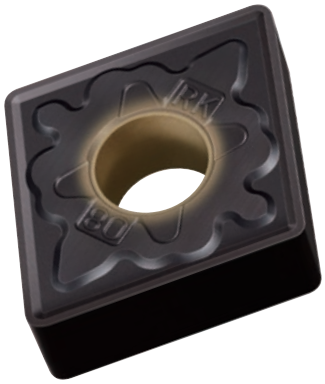
Conventional B



Conventional C

For heavy interrupted cutting of ductile cast iron

MC5125



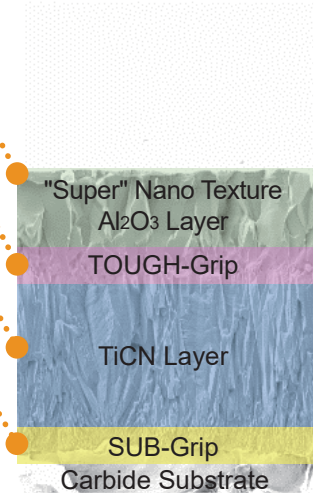
Excellent Stability and Fracture Resistance

Al_2O_3 layer with excellent wear resistance

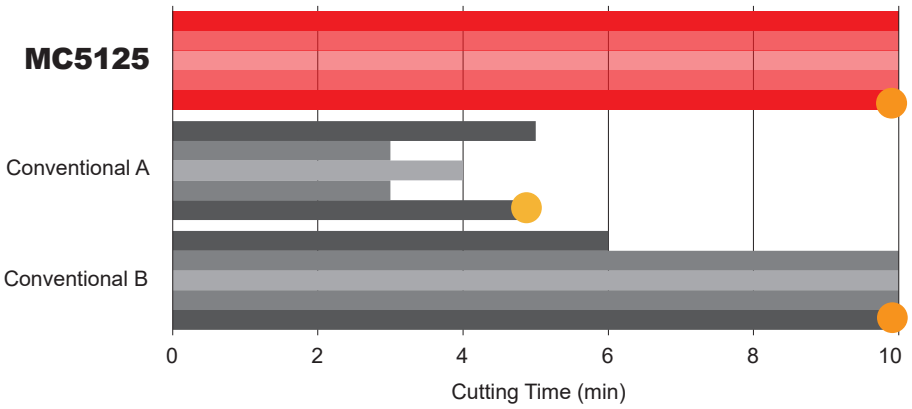
Intermediate layer with microstructure suitable for ductile cast iron

TiCN layer for hardness for heavy interrupted cutting

New adhesion layer with an enhanced resistance to peeling



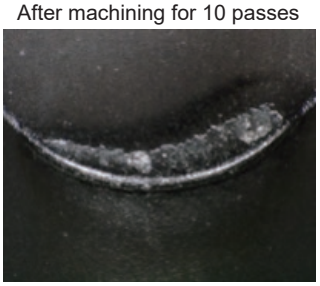
Comparison of fracture resistance after 10 passes of interrupted cutting of FCD700



<Cutting Conditions>

Workpiece Material	: JIS FCD700
Inserts	: CNMA120412
Cutting Speed	: vc = 250 m/min
Feed per Rev.	: f =0.3 mm/rev
Depth of Cut	: ap = 2.0 mm
Cutting Mode	: Wet Cutting

After machining for 10 passes

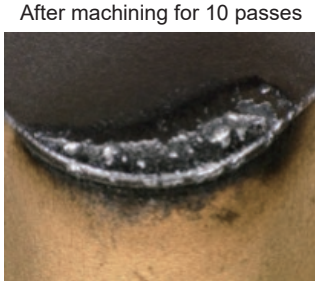


MC5125

After machining for 5 passes

Conventional A

After machining for 10 passes



Conventional B

Way to Select MC5100 Series

Gray Cast Iron

MC5105 is the first recommendation for high speed machining of gray cast iron.
Select a suitable chip breaker to optimise tool life and reduce wear.
MC5115 is also capable of reliable machining at speeds of 100-300 m/min and for unstable cutting conditions.

High Speed Cutting 200–1000m/min

MC5105

In case of fracture

Change to a chip breaker with a stronger cutting edge geometry

Cutting Speed 100–300m/min

MC5115

In case of wear

Change to a chip breaker with a sharper cutting edge geometry

Refer to page 9 for the chip breaker selection.

Cutting Conditions : ●: Stable Cutting ◔: General Cutting ✣: Unstable Cutting

Ductile Cast Iron

MC5115 is the first recommendation for ductile cast iron, including high strength ductile cast iron.
In order to prevent breakage and wear, select a suitable chip breaker.
MC5125 is also effective for heavy, interrupted and unstable cutting conditions.

First Recommendation

MC5115

In case of fracture

Change to a chip breaker with a stronger cutting edge geometry

In case of fracture

In case of wear

Heavy, Interrupted Cutting

MC5125

In case of wear

Change to a chip breaker with a sharper cutting edge geometry

Refer to page 9 for the chip breaker selection.

Cutting Conditions : ● : Stable Cutting ◔ : General Cutting ✠ : Unstable Cutting

Chip breaker system for cast iron turning

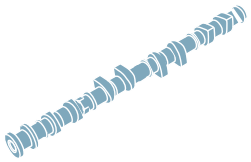
The entire range of new chip breakers has been designed by taking advantage of the properties of the new grades.
Each breaker has the optimum suitability for each respective application.

Negative Inserts

LK/MK/RK/Flat Top, GK/MA breaker

Select a chip breaker according to the machining conditions.





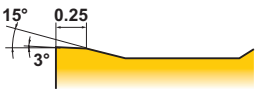
Focus on cutting edge sharpness

Stable Cutting (Continuous cutting, Without scale, etc.)

Low cutting resistance machining

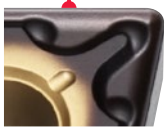
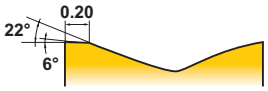

LK breaker

Positive land provides a sharp cutting edge and low cutting resistance.

MK breaker

Optimum balance between sharpness and high edge strength for general use.

MA breaker

Positive land provides a sharp cutting edge.

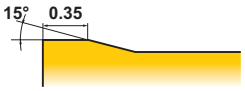
Chip Breaker Selection

Cutting Area	Chip Breaker		Features
Light Cutting	SH		Can be used low depth of cut and high feed rates. The curved edge allows smooth chip discharge.
	SW		In comparison to conventional chip breakers, the surface finish is maintained even if the feed per revolution is doubled. A wide chip pocket prevents chip jamming.
Medium Cutting	MP		Suitable for medium to light cutting. Chip breaker geometry appropriate for copying and back turning. Cutting edge geometry for an optimum balance of sharpness and fracture resistance.
	MW		The wiper allows up to double times higher feed. A wide chip pocket prevents chip jamming.
	MH		Flat land offers high edge strength. Good chip control with suitable chip pocket.
Rough Cutting	GH		For interrupted cutting and removing scale. A combination of wide land and a large chip pocket allows high feed rates.

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

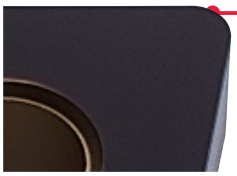
Focus on cutting edge strength

General to Heavy cutting



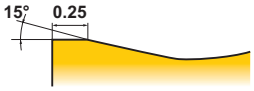
RK breaker

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



Flat Top

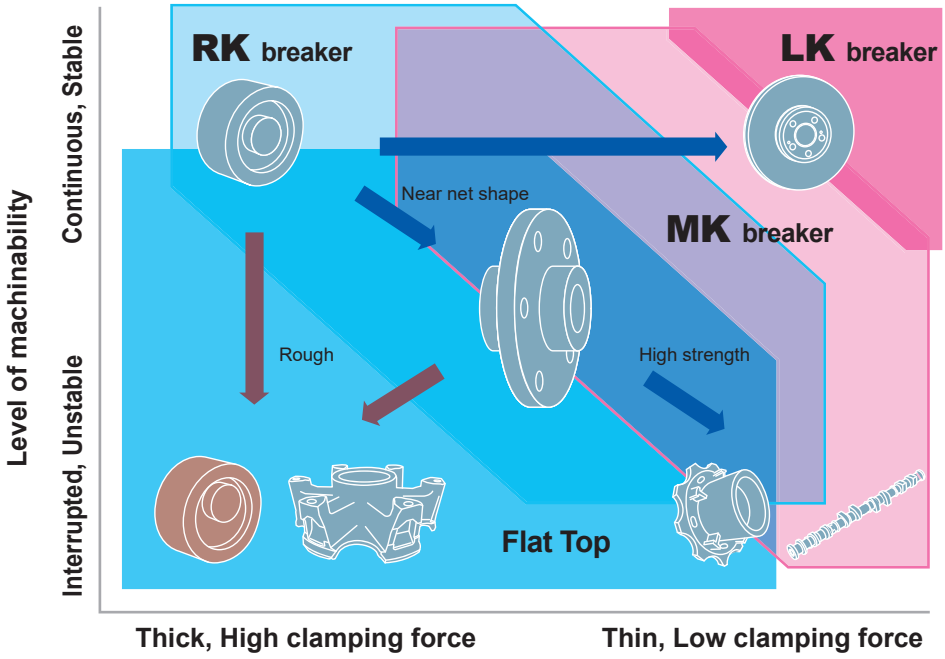
Flat top focusing on high edge strength.



GK breaker

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

Application map for cast iron

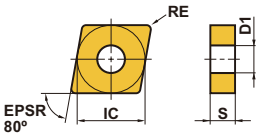


MC5100 Series

Negative Inserts (With hole)

M Class

CNMG
CNMA



Light Cutting	Light Cutting	Light Cutting	Medium Cutting	Medium Cutting	Medium Cutting
LK	SH	SW	MP	MK	GK
		(Wiper)			
Medium Cutting	**Medium Cutting**	**Medium Cutting**	**Rough Cutting**	**Rough Cutting**	**Strong Cutting Edge**
MA	MW	MH	RK	GH	Flat Top
	(Wiper)				

(mm)

Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
CNMG120404-LK	L	●	●	●	12.7	4.76	0.4	5.16
CNMG120408-LK	L	●	●	●	12.7	4.76	0.8	5.16
CNMG120412-LK	L	●	●	●	12.7	4.76	1.2	5.16
NEW CNMG120404-SH	L		●		12.7	4.76	0.4	5.16
NEW CNMG120408-SH	L		●		12.7	4.76	0.8	5.16
NEW CNMG120404-SW	L	●	●	●	12.7	4.76	0.4	5.16
NEW CNMG120408-SW	L	●	●	●	12.7	4.76	0.8	5.16
NEW CNMG120404-MP	M		●		12.7	4.76	0.4	5.16
NEW CNMG120408-MP	M		●		12.7	4.76	0.8	5.16
NEW CNMG120412-MP	M		●		12.7	4.76	1.2	5.16
NEW CNMG120416-MP	M		●		12.7	4.76	1.6	5.16
NEW CNMG160608-MP	M		●		15.875	6.35	0.8	6.35
NEW CNMG160612-MP	M		●		15.875	6.35	1.2	6.35
NEW CNMG160616-MP	M		●		15.875	6.35	1.6	6.35
CNMG120404-MK	M	●	●	●	12.7	4.76	0.4	5.16
CNMG120408-MK	M	●	●	●	12.7	4.76	0.8	5.16
CNMG120412-MK	M	●	●	●	12.7	4.76	1.2	5.16
CNMG120416-MK	M	●	●	●	12.7	4.76	1.6	5.16
CNMG160608-MK	M	●	●	●	15.875	6.35	0.8	6.35
CNMG160612-MK	M	●	●	●	15.875	6.35	1.2	6.35
CNMG160616-MK	M	●	●	●	15.875	6.35	1.6	6.35
CNMG190612-MK	M	●	●	●	19.05	6.35	1.2	7.93
CNMG190616-MK	M	●	●	●	19.05	6.35	1.6	7.93
CNMG120404-GK	M	●	●	●	12.7	4.76	0.4	5.16
CNMG120408-GK	M	●	●	●	12.7	4.76	0.8	5.16
CNMG120412-GK	M	●	●	●	12.7	4.76	1.2	5.16
CNMG120416-GK	M	●	●	●	12.7	4.76	1.6	5.16
CNMG160612-GK	M	●	●	●	15.875	6.35	1.2	6.35
CNMG160616-GK	M	●	●	●	15.875	6.35	1.6	6.35
NEW CNMG190612-GK	M	●	●	●	19.05	6.35	1.2	7.93
NEW CNMG190616-GK	M		●	●	19.05	6.35	1.6	7.93
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
NEW CNMG190612-MA	M	●	●	●	19.05	6.35	1.2	7.93
NEW CNMG190616-MA	M		●	●	19.05	6.35	1.6	7.93

Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
NEW CNMG120408-MW	M	●	●	●	12.7	4.76	0.8	5.16
NEW CNMG120412-MW	M	●	●	●	12.7	4.76	1.2	5.16
NEW CNMG120408-MH	M		●		12.7	4.76	0.8	5.16
NEW CNMG120412-MH	M		●		12.7	4.76	1.2	5.16
NEW CNMG120416-MH	M		●		12.7	4.76	1.6	5.16
NEW CNMG160608-MH	M		●		15.875	6.35	0.8	6.35
NEW CNMG160612-MH	M		●		15.875	6.35	1.2	6.35
NEW CNMG160616-MH	M		●		15.875	6.35	1.6	6.35
NEW CNMG190612-MH	M		●		19.05	6.35	1.2	7.93
CNMG120408-RK	R	●	●	●	12.7	4.76	0.8	5.16
CNMG120412-RK	R	●	●	●	12.7	4.76	1.2	5.16
CNMG120416-RK	R	●	●	●	12.7	4.76	1.6	5.16
CNMG160608-RK	R	●	●	●	15.875	6.35	0.8	6.35
CNMG160612-RK	R	●	●	●	15.875	6.35	1.2	6.35
CNMG160616-RK	R	●	●	●	15.875	6.35	1.6	6.35
CNMG190612-RK	R	●	●	●	19.05	6.35	1.2	7.93
CNMG190616-RK	R	●	●	●	19.05	6.35	1.6	7.93
NEW CNMG120408-GH	R	●	●	●	12.7	4.76	0.8	5.16
NEW CNMG120412-GH	R	●	●	●	12.7	4.76	1.2	5.16
NEW CNMG120416-GH	R	●	●	●	12.7	4.76	1.6	5.16
NEW CNMG160612-GH	R	●	●	●	15.875	6.35	1.2	6.35
NEW CNMG160616-GH	R	●	●	●	15.875	6.35	1.6	6.35
NEW CNMG190612-GH	R	●	●	●	19.05	6.35	1.2	7.93
NEW CNMG190616-GH	R	●	●	●	19.05	6.35	1.6	7.93
CNMA120404	-	●	●	●	12.7	4.76	0.4	5.16
CNMA120408	-	●	●	●	12.7	4.76	0.8	5.16
CNMA120412	-	●	●	●	12.7	4.76	1.2	5.16
CNMA120416	-	●	●	●	12.7	4.76	1.6	5.16
CNMA160612	-	●	●	●	15.875	6.35	1.2	6.35
CNMA160616	-	●	●	●	15.875	6.35	1.6	6.35
CNMA190612	-	●	●	●	19.05	6.35	1.2	7.93
CNMA190616	-	●	●	●	19.05	6.35	1.6	7.93
CNMA190624	-	●	●	●	19.05	6.35	2.4	7.93

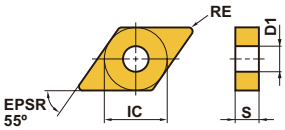
● = NEW

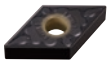
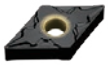
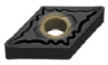
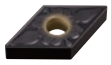
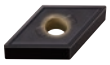
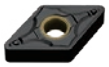
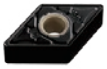
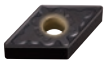
● : Inventory maintained in Japan.
(10 inserts in one case)

Negative Inserts (With hole)

M Class

DNMG
DNMA



Light Cutting	Light Cutting	Medium Cutting	Medium Cutting	Medium Cutting	Medium Cutting
LK	SH	MP	MK	GK	MA
					
Medium Cutting	**Medium Cutting**	**Rough Cutting**	**Rough Cutting**	**Strong Cutting Edge**	
MH	MW	RK	GH	Flat Top	
	 (Wiper)				

(mm)

	Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
	DNMG110408-LK	L	●	●	●	9.525	4.76	0.8	3.81
	DNMG150404-LK	L	●	●	●	12.7	4.76	0.4	5.16
	DNMG150408-LK	L	●	●	●	12.7	4.76	0.8	5.16
	DNMG150412-LK	L	●	●	●	12.7	4.76	1.2	5.16
	DNMG150604-LK	L	●	●	●	12.7	6.35	0.4	5.16
	DNMG150608-LK	L	●	●	●	12.7	6.35	0.8	5.16
	DNMG150612-LK	L	●	●	●	12.7	6.35	1.2	5.16
NEW	DNMG150404-SH	L		●		12.7	4.76	0.4	5.16
NEW	DNMG150408-SH	L		●		12.7	4.76	0.8	5.16
NEW	DNMG150412-SH	L		●		12.7	4.76	1.2	5.16
NEW	DNMG150608-SH	L		●		12.7	6.35	0.8	5.16
NEW	DNMG150612-SH	L		●		12.7	6.35	1.2	5.16
NEW	DNMG150404-MP	M		●		12.7	4.76	0.4	5.16
NEW	DNMG150408-MP	M		●		12.7	4.76	0.8	5.16
NEW	DNMG150412-MP	M		●		12.7	4.76	1.2	5.16
NEW	DNMG150416-MP	M		●		12.7	4.76	1.6	5.16
NEW	DNMG150604-MP	M		●		12.7	6.35	0.4	5.16
NEW	DNMG150608-MP	M		●		12.7	6.35	0.8	5.16
NEW	DNMG150612-MP	M		●		12.7	6.35	1.2	5.16
NEW	DNMG150616-MP	M		●		12.7	6.35	1.6	5.16
	DNMG110408-MK	M	●	●	●	9.525	4.76	0.8	3.81
	DNMG150404-MK	M	●	●	●	12.7	4.76	0.4	5.16
	DNMG150408-MK	M	●	●	●	12.7	4.76	0.8	5.16
	DNMG150412-MK	M	●	●	●	12.7	4.76	1.2	5.16
	DNMG150604-MK	M	●	●	●	12.7	6.35	0.4	5.16
	DNMG150608-MK	M	●	●	●	12.7	6.35	0.8	5.16
	DNMG150612-MK	M	●	●	●	12.7	6.35	1.2	5.16
NEW	DNMG110408-GK	M	●	●	●	9.525	4.76	0.8	3.81
	DNMG150404-GK	M	●	●	●	12.7	4.76	0.4	5.16
	DNMG150408-GK	M	●	●	●	12.7	4.76	0.8	5.16
	DNMG150412-GK	M	●	●	●	12.7	4.76	1.2	5.16
	DNMG150604-GK	M	●	●	●	12.7	6.35	0.4	5.16
	DNMG150608-GK	M	●	●	●	12.7	6.35	0.8	5.16
	DNMG150612-GK	M	●	●	●	12.7	6.35	1.2	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

	Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
NEW	DNMG150408-MH	M		●		12.7	4.76	0.8	5.16
NEW	DNMG150412-MH	M		●		12.7	4.76	1.2	5.16
NEW	DNMG150604-MH	M		●		12.7	4.76	0.4	5.16
NEW	DNMG150608-MH	M		●		12.7	6.35	0.8	5.16
NEW	DNMG150612-MH	M		●		12.7	6.35	1.2	5.16
NEW	DNMX150408-MW	M	●	●	●	12.7	4.76	0.8	5.16
NEW	DNMX150412-MW	M	●	●	●	12.7	4.76	1.2	5.16
NEW	DNMX150608-MW	M	●	●	●	12.7	6.35	0.8	5.16
NEW	DNMX150612-MW	M	●	●	●	12.7	6.35	1.2	5.16
	DNMG150408-RK	R	●	●	●	12.7	4.76	0.8	5.16
	DNMG150412-RK	R	●	●	●	12.7	4.76	1.2	5.16
	DNMG150608-RK	R	●	●	●	12.7	6.35	0.8	5.16
	DNMG150612-RK	R	●	●	●	12.7	6.35	1.2	5.16
NEW	DNMG150408-GH	R	●	●	●	12.7	4.76	0.8	5.16
NEW	DNMG150412-GH	R	●	●	●	12.7	4.76	1.2	5.16
NEW	DNMG150608-GH	R	●	●	●	12.7	6.35	0.8	5.16
NEW	DNMG150612-GH	R	●	●	●	12.7	6.35	1.2	5.16
	DNMA150404	-	●	●	●	12.7	4.76	0.4	5.16
	DNMA150408	-	●	●	●	12.7	4.76	0.8	5.16
	DNMA150412	-	●	●	●	12.7	4.76	1.2	5.16
	DNMA150604	-	●	●	●	12.7	6.35	0.4	5.16
	DNMA150608	-	●	●	●	12.7	6.35	0.8	5.16
	DNMA150612	-	●	●	●	12.7	6.35	1.2	5.16

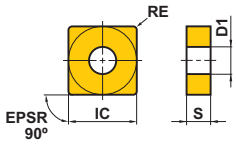
● = NEW

MC5100 Series

Negative Inserts (With hole)

M Class

SNMG
SNMA



Light Cutting	Light Cutting	Medium Cutting	Medium Cutting	Medium Cutting	Medium Cutting
LK	SH	MP	MK	GK	MA
					
Medium Cutting	**Rough Cutting**	**Rough Cutting**	**Strong Cutting Edge**		
MH	RK	GH	Flat Top		
					

(mm)

Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
SNMG120408-LK	L	●	●	●	12.7	4.76	0.8	5.16
SNMG120412-LK	L	●	●	●	12.7	4.76	1.2	5.16
NEW SNMG120404-SH	L		●		12.7	4.76	0.4	5.16
NEW SNMG120408-SH	L		●		12.7	4.76	0.8	5.16
NEW SNMG120412-SH	L		●		12.7	4.76	1.2	5.16
NEW SNMG120404-MP	M		●		12.7	4.76	0.4	5.16
NEW SNMG120408-MP	M		●		12.7	4.76	0.8	5.16
NEW SNMG120412-MP	M		●		12.7	4.76	1.2	5.16
SNMG120408-MK	M	●	●	●	12.7	4.76	0.8	5.16
SNMG120412-MK	M	●	●	●	12.7	4.76	1.2	5.16
SNMG120416-MK	M	●	●	●	12.7	4.76	1.6	5.16
SNMG150612-MK	M	●	●	●	15.875	6.35	1.2	6.35
SNMG150616-MK	M	●	●	●	15.875	6.35	1.6	6.35
SNMG190612-MK	M	●	●	●	19.05	6.35	1.2	7.93
SNMG190616-MK	M	●	●	●	19.05	6.35	1.6	7.93
SNMG120404-GK	M	●	●	●	12.7	4.76	0.4	5.16
SNMG120408-GK	M	●	●	●	12.7	4.76	0.8	5.16
SNMG120412-GK	M	●	●	●	12.7	4.76	1.2	5.16
SNMG120416-GK	M	●	●	●	12.7	4.76	1.6	5.16
SNMG150612-GK	M	●	●	●	15.875	6.35	1.2	6.35
NEW SNMG190612-GK	M	●	●	●	19.05	6.35	1.2	7.93
NEW SNMG190616-GK	M		●	●	19.05	6.35	1.6	7.93
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
SNMG120416-MA	M	●	●	●	12.7	4.76	1.6	5.16
SNMG150612-MA	M		●	●	15.875	6.35	1.2	6.35
NEW SNMG190612-MA	M		●	●	19.05	6.35	1.2	7.93
NEW SNMG120408-MH	M		●		12.7	4.76	0.8	5.16
NEW SNMG120412-MH	M		●		12.7	4.76	1.2	5.16
NEW SNMG190612-MH	M		●		19.05	6.35	1.2	7.93

Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
SNMG120408-RK	R	●	●	●	12.7	4.76	0.8	5.16
SNMG120412-RK	R	●	●	●	12.7	4.76	1.2	5.16
SNMG120416-RK	R	●	●	●	12.7	4.76	1.6	5.16
SNMG150612-RK	R	●	●	●	15.875	6.35	1.2	6.35
SNMG150616-RK	R	●	●	●	15.875	6.35	1.6	6.35
SNMG190612-RK	R	●	●	●	19.05	6.35	1.2	7.93
SNMG190616-RK	R	●	●	●	19.05	6.35	1.6	7.93
NEW SNMG120408-GH	R	●	●	●	12.7	4.76	0.8	5.16
NEW SNMG120412-GH	R	●	●	●	12.7	4.76	1.2	5.16
SNMA090308	-	●	●	●	9.525	3.18	0.8	3.81
SNMA120408	-	●	●	●	12.7	4.76	0.8	5.16
SNMA120412	-	●	●	●	12.7	4.76	1.2	5.16
SNMA120416	-	●	●	●	12.7	4.76	1.6	5.16
SNMA150612	-	●	●	●	15.875	6.35	1.2	6.35
SNMA150616	-	●	●	●	15.875	6.35	1.6	6.35
SNMA190612	-	●	●	●	19.05	6.35	1.2	7.93
SNMA190616	-	●	●	●	19.05	6.35	1.6	7.93

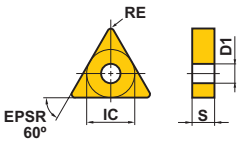
● = NEW

● : Inventory maintained in Japan.
(10 inserts in one case)

Negative Inserts (With hole)

M Class

TNMG
TNMA
TNMX



Light Cutting	Light Cutting	Medium Cutting	Medium Cutting	Medium Cutting	Medium Cutting
LK	SH	MP	MK	GK	MA
					
Medium Cutting	**Medium Cutting**	**Rough Cutting**	**Rough Cutting**	**Strong Cutting Edge**	
MH	MW	RK	GH	Flat Top	
	 (Wiper)				

(mm)

Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
TNMG160404-LK	L	●	●	●	9.525	4.76	0.4	3.81
TNMG160408-LK	L	●	●	●	9.525	4.76	0.8	3.81
TNMG160412-LK	L	●	●	●	9.525	4.76	1.2	3.81
TNMG160404-SH	L		●		9.525	4.76	0.4	3.81
TNMG160408-SH	L		●		9.525	4.76	0.8	3.81
NEW **TNMG160404-MP**	M		●		9.525	4.76	0.4	3.81
NEW **TNMG160408-MP**	M		●		9.525	4.76	0.8	3.81
NEW **TNMG160412-MP**	M		●		9.525	4.76	1.2	3.81
NEW **TNMG220408-MP**	M		●		12.7	4.76	0.8	5.16
NEW **TNMG220412-MP**	M		●		12.7	4.76	1.2	5.16
TNMG160404-MK	M	●	●	●	9.525	4.76	0.4	3.81
TNMG160408-MK	M	●	●	●	9.525	4.76	0.8	3.81
TNMG160412-MK	M	●	●	●	9.525	4.76	1.2	3.81
TNMG220408-MK	M	●	●	●	12.7	4.76	0.8	5.16
TNMG220412-MK	M	●	●	●	12.7	4.76	1.2	5.16
TNMG220416-MK	M	●	●	●	12.7	4.76	1.6	5.16
TNMG160404-GK	M	●	●	●	9.525	4.76	0.4	3.81
TNMG160408-GK	M	●	●	●	9.525	4.76	0.8	3.81
TNMG160412-GK	M	●	●	●	9.525	4.76	1.2	3.81
TNMG160416-GK	M	●	●	●	9.525	4.76	1.6	3.81
TNMG220408-GK	M	●	●	●	12.7	4.76	0.8	5.16
TNMG220412-GK	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
TNMG160416-MA	M	●	●	●	9.525	4.76	1.6	3.81
TNMG220408-MA	M	●	●	●	12.7	4.76	0.8	5.16
TNMG220412-MA	M	●	●	●	12.7	4.76	1.2	5.16
TNMG220416-MA	M		●	●	12.7	4.76	1.6	5.16
NEW **TNMG160404-MH**	M		●		9.525	4.76	0.4	3.81
NEW **TNMG160408-MH**	M		●		9.525	4.76	0.8	3.81
NEW **TNMG160412-MH**	M		●		9.525	4.76	1.2	3.81
NEW **TNMG220408-MH**	M		●		12.7	4.76	0.8	5.16
NEW **TNMG220412-MH**	M		●		12.7	4.76	1.2	5.16
NEW **TNMX160408-MW**	M	●	●	●	9.525	4.76	0.8	3.81
NEW **TNMX160412-MW**	M	●	●	●	9.525	4.76	1.2	3.81

Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
TNMG160408-RK	R	●	●	●	9.525	4.76	0.8	3.81
TNMG160412-RK	R	●	●	●	9.525	4.76	1.2	3.81
TNMG160416-RK	R	●	●	●	9.525	4.76	1.6	3.81
TNMG220408-RK	R	●	●	●	12.7	4.76	0.8	5.16
TNMG220412-RK	R	●	●	●	12.7	4.76	1.2	5.16
TNMG220416-RK	R	●	●	●	12.7	4.76	1.6	5.16
NEW **TNMG160408-GH**	R	●	●	●	9.525	4.76	0.8	3.81
NEW **TNMG160412-GH**	R		●	●	9.525	4.76	1.2	3.81
NEW **TNMG220408-GH**	R		●	●	12.7	4.76	0.8	5.16
NEW **TNMG220412-GH**	R	●	●	●	12.7	4.76	1.2	5.16
TNMA160404	-	●	●	●	9.525	4.76	0.4	3.81
TNMA160408	-	●	●	●	9.525	4.76	0.8	3.81
TNMA160412	-	●	●	●	9.525	4.76	1.2	3.81
TNMA160416	-	●	●	●	9.525	4.76	1.6	3.81
TNMA160420	-	●	●	●	9.525	4.76	2.0	3.81
TNMA220408	-	●	●	●	12.7	4.76	0.8	5.16
TNMA220412	-	●	●	●	12.7	4.76	1.2	5.16
TNMA220416	-	●	●	●	12.7	4.76	1.6	5.16

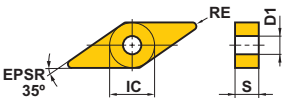
● = NEW

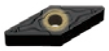
MC5100 Series

Negative Inserts (With hole)

M Class

VNMG
VNMA



Light Cutting	Medium Cutting	Medium Cutting	Medium Cutting	Medium Cutting	Medium Cutting
LK	MP	MK	GK	MA	MH
					
Strong Cutting Edge					
Flat Top					
					

(mm)

	Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
	VNMG160404-LK	L	●	●	●	9.525	4.76	0.4	3.81
	VNMG160408-LK	L	●	●	●	9.525	4.76	0.8	3.81
NEW	**VNMG160404-MP**	M		●		9.525	4.76	0.4	3.81
NEW	**VNMG160408-MP**	M		●		9.525	4.76	0.8	3.81
NEW	**VNMG160412-MP**	M		●		9.525	4.76	1.2	3.81
	VNMG160404-MK	M	●	●	●	9.525	4.76	0.4	3.81
	VNMG160408-MK	M	●	●	●	9.525	4.76	0.8	3.81
	VNMG160412-MK	M	●	●	●	9.525	4.76	1.2	3.81
	VNMG160404-GK	M	●	●	●	9.525	4.76	0.4	3.81
	VNMG160408-GK	M	●	●	●	9.525	4.76	0.8	3.81
	VNMG160412-GK	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
NEW	**VNMG160404-MH**	M	●			9.525	4.76	0.4	3.81
NEW	**VNMG160408-MH**	M	●			9.525	4.76	0.8	3.81
	VNMA160404	-	●	●	●	9.525	4.76	0.4	3.81
	VNMA160408	-	●	●	●	9.525	4.76	0.8	3.81
	VNMA160412	-	●	●	●	9.525	4.76	1.2	3.81

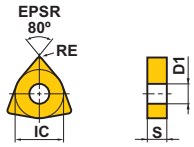
● = NEW

● : Inventory maintained in Japan.
(10 inserts in one case)

Negative Inserts (With hole)

M Class

WNMG
WNMA



Light Cutting	Light Cutting	Light Cutting	Medium Cutting	Medium Cutting	Medium Cutting
LK	SH	SW	MP	MK	GK
		(Wiper)			
Medium Cutting	**Medium Cutting**	**Medium Cutting**	**Rough Cutting**	**Rough Cutting**	**Strong Cutting Edge**
MA	MH	MW	RK	GH	Flat Top
		(Wiper)			

(mm)

	Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
	WNMG080404-LK	L	●	●	●	12.7	4.76	0.4	5.16
	WNMG080408-LK	L	●	●	●	12.7	4.76	0.8	5.16
	WNMG080412-LK	L	●	●	●	12.7	4.76	1.2	5.16
NEW	**WNMG080404-SH**	L		●		12.7	4.76	0.4	5.16
NEW	**WNMG080408-SH**	L		●		12.7	4.76	0.8	5.16
NEW	**WNMG080412-SH**	L		●		12.7	4.76	1.2	5.16
NEW	**WNMG080404-SW**	L	●	●	●	12.7	4.76	0.4	5.16
NEW	**WNMG080408-SW**	L	●	●	●	12.7	4.76	0.8	5.16
NEW	**WNMG06T304-MP**	M		●		9.525	3.97	0.4	3.81
NEW	**WNMG06T308-MP**	M		●		9.525	3.97	0.8	3.81
NEW	**WNMG06T312-MP**	M		●		9.525	3.97	1.2	3.81
NEW	**WNMG060404-MP**	M		●		9.525	4.76	0.4	3.81
NEW	**WNMG060408-MP**	M		●		9.525	4.76	0.8	3.81
NEW	**WNMG060412-MP**	M		●		9.525	4.76	1.2	3.81
NEW	**WNMG080404-MP**	M		●		12.7	4.76	0.4	5.16
NEW	**WNMG080408-MP**	M		●		12.7	4.76	0.8	5.16
NEW	**WNMG080412-MP**	M		●		12.7	4.76	1.2	5.16
NEW	**WNMG080416-MP**	M		●		12.7	4.76	1.6	5.16
	WNMG080404-MK	M	●	●	●	12.7	4.76	0.4	5.16
	WNMG080408-MK	M	●	●	●	12.7	4.76	0.8	5.16
	WNMG080412-MK	M	●	●	●	12.7	4.76	1.2	5.16
	WNMG080416-MK	M	●	●	●	12.7	4.76	1.6	5.16
	WNMG060404-GK	M	●	●	●	9.525	4.76	0.4	3.81
	WNMG060408-GK	M	●	●	●	9.525	4.76	0.8	3.81
	WNMG080404-GK	M	●	●	●	12.7	4.76	0.4	5.16
	WNMG080408-GK	M	●	●	●	12.7	4.76	0.8	5.16
	WNMG080412-GK	M	●	●	●	12.7	4.76	1.2	5.16
	WNMG080416-GK	M	●	●	●	12.7	4.76	1.6	5.16
	WNMG060408-MA	M	●	●	●	9.525	4.76	0.8	3.81
	WNMG060412-MA	M	●	●	●	9.525	4.76	1.2	3.81
	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
	WNMG080408-MH	M		●		12.7	4.76	0.8	5.16
	WNMG080412-MH	M		●		12.7	4.76	1.2	5.16
NEW	**WNMG060408-MW**	M	●	●	●	9.525	4.76	0.8	3.81
NEW	**WNMG060412-MW**	M	●	●	●	9.525	4.76	1.2	3.81
NEW	**WNMG080408-MW**	M	●	●	●	12.7	4.76	0.8	5.16
NEW	**WNMG080412-MW**	M	●	●	●	12.7	4.76	1.2	5.16

	Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
	WNMG080408-RK	R	●	●	●	12.7	4.76	0.8	5.16
	WNMG080412-RK	R	●	●	●	12.7	4.76	1.2	5.16
	WNMG080416-RK	R	●	●	●	12.7	4.76	1.6	5.16
NEW	**WNMG080408-GH**	R	●	●	●	12.7	4.76	0.8	5.16
NEW	**WNMG080412-GH**	R	●	●	●	12.7	4.76	1.2	5.16
	WNMA060408	-	●	●	●	9.525	4.76	0.8	3.81
	WNMA060412	-	●	●	●	9.525	4.76	1.2	3.81
	WNMA080404	-	●	●	●	12.7	4.76	0.4	5.16
	WNMA080408	-	●	●	●	12.7	4.76	0.8	5.16
	WNMA080412	-	●	●	●	12.7	4.76	1.2	5.16
	WNMA080416	-	●	●	●	12.7	4.76	1.6	5.16

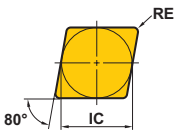
● = NEW

MC5100 Series

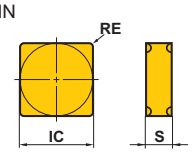
Negative Inserts (Without hole)

M Class

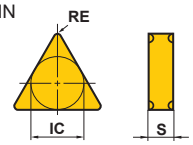
CNMN



SNMN



TNMN



Strong Cutting Edge	Strong Cutting Edge	Strong Cutting Edge
Flat Top	Flat Top	Flat Top
		

(mm)

Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
CNMN120408	–	●	●	●	12.7	4.76	0.8	–
CNMN120412	–	●	●	●	12.7	4.76	1.2	–
CNMN120416	–	●	●	●	12.7	4.76	1.6	–
SNMN120408	–	●	●	●	12.7	4.76	0.8	–
SNMN120412	–	●	●	●	12.7	4.76	1.2	–
SNMN120416	–	●	●	●	12.7	4.76	1.6	–
SNMN120420	–	●	●	●	12.7	4.76	2.0	–

Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
TNMN160408	–	●	●	●	9.525	4.76	0.8	–
TNMN160412	–	●	●	●	9.525	4.76	1.2	–
TNMN160416	–	●	●	●	9.525	4.76	1.6	–
TNMN160420	–	●	●	●	9.525	4.76	2.0	–

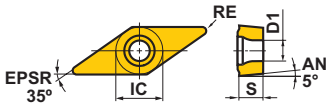
● : Inventory maintained in Japan.
(10 inserts in one case)

5° Positive inserts (With hole) NEW

M Class

VBMT
VBMW

Medium Cutting	Medium Cutting	Strong Cutting Edge
MK	MV	Flat Top
		



(mm)

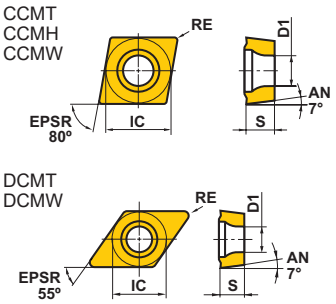
Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
VBMT160404-MK	M	●	●	●	9.525	4.76	0.4	4.4
VBMT160408-MK	M	●	●	●	9.525	4.76	0.8	4.4
VBMT110304-MV	M		●		6.35	3.18	0.4	2.9
VBMT110308-MV	M		●		6.35	3.18	0.8	2.9
VBMT160404-MV	M		●		9.525	4.76	0.4	4.4
VBMT160408-MV	M		●		9.525	4.76	0.8	4.4
VBMW160408	-	●	●	●	9.525	4.76	0.8	4.4

● = NEW

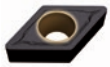
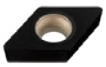
MC5100 Series

7° Positive inserts (With hole)

M Class



Light Cutting	Medium Cutting	Medium Cutting	Medium Cutting	Strong Cutting Edge
SW	MK	MV	MW	Flat Top
				
(Wiper)			(Wiper)	

Medium Cutting	Medium Cutting	Strong Cutting Edge		
MK	MV	Flat Top		
				

(mm)

	Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
NEW	CCMT060204-SW	L		●		6.35	2.38	0.4	2.8
NEW	CCMT09T302-SW	L		●		9.525	3.97	0.2	4.4
NEW	CCMT09T304-SW	L		●		9.525	3.97	0.4	4.4
NEW	CCMT060202-MK	M	●	●	●	6.35	2.38	0.2	2.8
	CCMT060204-MK	M	●	●	●	6.35	2.38	0.4	2.8
	CCMT060208-MK	M	●	●	●	6.35	2.38	0.8	2.8
NEW	CCMT09T302-MK	M	●	●	●	9.525	3.97	0.2	4.4
	CCMT09T304-MK	M	●	●	●	9.525	3.97	0.4	4.4
	CCMT09T308-MK	M	●	●	●	9.525	3.97	0.8	4.4
	CCMT120404-MK	M	●	●	●	12.7	4.76	0.4	5.5
	CCMT120408-MK	M	●	●	●	12.7	4.76	0.8	5.5
	CCMT120412-MK	M	●	●	●	12.7	4.76	1.2	5.5
NEW	CCMH060204-MV	M		●		6.35	2.38	0.4	2.8
NEW	CCMT120404-MW	M		●		12.7	4.76	0.4	5.5
NEW	CCMT120408-MW	M		●		12.7	4.76	0.8	5.5
NEW	CCMW060204	-	●	●	●	6.35	2.38	0.4	2.8
NEW	CCMW060208	-	●	●	●	6.35	2.38	0.8	2.8
NEW	CCMW09T304	-	●	●	●	9.525	3.97	0.4	4.4
NEW	CCMW09T308	-	●	●	●	9.525	3.97	0.8	4.4
NEW	CCMW09T312	-	●	●	●	9.525	3.97	1.2	4.4
NEW	CCMW120404	-	●	●	●	12.7	4.76	0.4	5.5
NEW	CCMW120408	-	●	●	●	12.7	4.76	0.8	5.5
NEW	CCMW120412	-	●	●	●	12.7	4.76	1.2	5.5

	Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
NEW	DCMT070202-MK	M	●	●	●	6.35	2.38	0.2	2.8
	DCMT070204-MK	M	●	●	●	6.35	2.38	0.4	2.8
	DCMT070208-MK	M	●	●	●	6.35	2.38	0.8	2.8
NEW	DCMT11T302-MK	M	●	●	●	9.525	3.97	0.2	4.4
	DCMT11T304-MK	M	●	●	●	9.525	3.97	0.4	4.4
	DCMT11T308-MK	M	●	●	●	9.525	3.97	0.8	4.4
	DCMT150404-MK	M	●	●	●	12.7	4.76	0.4	5.5
	DCMT150408-MK	M	●	●	●	12.7	4.76	0.8	5.5
NEW	DCMT070204-MV	M		●		6.35	2.38	0.4	2.8
NEW	DCMT070208-MV	M		●		6.35	2.38	0.8	2.8
NEW	DCMT11T304-MV	M		●		9.525	3.97	0.4	4.4
NEW	DCMT11T308-MV	M		●		9.525	3.97	0.8	4.4
NEW	DCMW070204	-	●	●	●	6.35	2.38	0.4	2.8
NEW	DCMW11T304	-	●	●	●	9.525	3.97	0.4	4.4
NEW	DCMW11T308	-	●	●	●	9.525	3.97	0.8	4.4

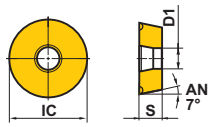
● = NEW

● : Inventory maintained in Japan.
(10 inserts in one case)

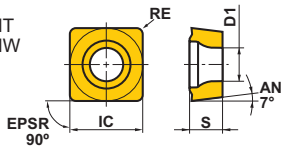
7° Positive Inserts (With Hole) NEW

M Class

RCMX



SCMT
SCMW



Medium Cutting	
Standard	
	

Medium Cutting	Strong Cutting Edge
MK	Flat Top
	

(mm)

Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
RCMX1204M0	M		●		12.7	4.76	-	4.2

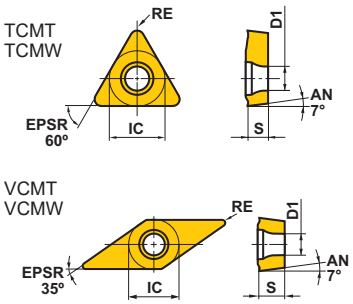
Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
SCMT09T304-MK	M	●	●	●	9.525	3.97	0.4	4.4
SCMT09T308-MK	M	●	●	●	9.525	3.97	0.8	4.4
SCMT120404-MK	M	●	●	●	12.7	4.76	0.4	5.5
SCMT120408-MK	M	●	●	●	12.7	4.76	0.8	5.5
SCMW09T304	-	●	●	●	9.525	3.97	0.4	4.4
SCMW09T308	-	●	●	●	9.525	3.97	0.8	4.4
SCMW120408	-	●	●	●	12.7	4.76	0.8	5.5

● = NEW

MC5100 Series

7° Positive Inserts (With Hole) NEW

M Class



Light Cutting	Medium Cutting	Strong Cutting Edge
LK	MK	Flat Top
		
Medium Cutting	**Medium Cutting**	**Strong Cutting Edge**
MK	MV	Flat Top
		

(mm)

Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
TCMT110202-LK	L	●	●	●	6.35	2.38	0.2	2.8
TCMT110204-LK	L	●	●	●	6.35	2.38	0.4	2.8
TCMT110208-LK	L	●	●	●	6.35	2.38	0.8	2.8
TCMT110204-MK	M	●	●	●	6.35	2.38	0.4	2.8
TCMT110208-MK	M	●	●	●	6.35	2.38	0.8	2.8
TCMT16T304-MK	M	●	●	●	9.525	3.97	0.4	4.4
TCMT16T308-MK	M	●	●	●	9.525	3.97	0.8	4.4
TCMT16T312-MK	M	●	●	●	9.525	3.97	1.2	4.4
TCMW110204	-	●	●	●	6.35	2.38	0.4	2.8
TCMW16T304	-	●	●	●	9.525	3.97	0.4	4.4
TCMW16T308	-	●	●	●	9.525	3.97	0.8	4.4
TCMW16T312	-	●	●	●	9.525	3.97	1.2	4.4

Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
VCMT160404-MK	M	●	●	●	9.525	4.76	0.4	4.4
VCMT160408-MK	M	●	●	●	9.525	4.76	0.8	4.4
VCMT080204-MV	M		●		4.76	2.38	0.4	2.4
VCMW160404	-	●	●	●	9.525	4.76	0.4	4.4
VCMW160408	-	●	●	●	9.525	4.76	0.8	4.4

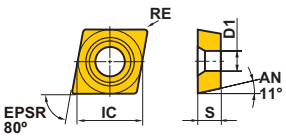
● = NEW

● : Inventory maintained in Japan.
(10 inserts in one case)

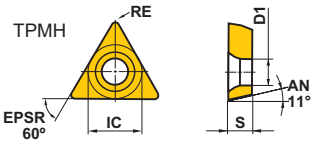
11° Positive Inserts (With Hole) NEW

M Class

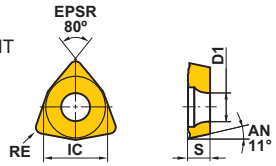
CPMH



TPMH



WPMT



Medium Cutting	Medium Cutting	Light Cutting	Medium Cutting
MK	MV	LK	MV
			
Medium Cutting			
MV			
			

(mm)

Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
CPMH080204-MK	M	●	●	●	7.94	2.38	0.4	3.5
CPMH080208-MK	M	●	●	●	7.94	2.38	0.8	3.5
CPMH090304-MK	M	●	●	●	9.525	3.18	0.4	4.5
CPMH090308-MK	M	●	●	●	9.525	3.18	0.8	4.5
CPMH080204-MV	M		●		7.94	2.38	0.4	3.5
CPMH080208-MV	M		●		7.94	2.38	0.8	3.5
CPMH090304-MV	M		●		9.525	3.18	0.4	4.5
CPMH090308-MV	M		●		9.525	3.18	0.8	4.5

Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
TPMH110302-LK	L	●	●	●	6.35	3.18	0.2	3.4
TPMH110304-LK	L	●	●	●	6.35	3.18	0.4	3.4
TPMH110308-LK	L	●	●	●	6.35	3.18	0.8	3.4
TPMH160302-LK	L	●	●	●	9.525	3.18	0.2	4.4
TPMH160304-LK	L	●	●	●	9.525	3.18	0.4	4.4
TPMH160308-LK	L	●	●	●	9.525	3.18	0.8	4.4
TPMH080204-MV	M		●		4.76	2.38	0.4	2.4
TPMH090204-MV	M		●		5.56	2.38	0.4	2.9
TPMH090208-MV	M		●		5.56	2.38	0.8	2.9
TPMH110304-MV	M		●		6.35	3.18	0.4	3.4
TPMH110308-MV	M		●		6.35	3.18	0.8	3.4
TPMH160304-MV	M		●		9.525	3.18	0.4	4.4
TPMH160308-MV	M		●		9.525	3.18	0.8	4.4
WPMT040204-MV	M		●		6.35	2.38	0.4	2.8
WPMT060304-MV	M		●		9.525	3.18	0.4	4.4
WPMT060308-MV	M		●		9.525	3.18	0.8	4.4

● = NEW

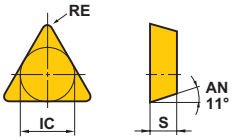
MC5100 Series

11° Positive Inserts (Without Hole) NEW

M Class

Medium Cutting	Strong Cutting Edge
MK	Flat Top
	

TPMR
TPMN



(mm)

Order Number	Cutting Area	MC5105	MC5115	MC5125	IC	S	RE	D1
TPMR110304-MK	M	●	●	●	6.35	3.18	0.4	-
TPMR110308-MK	M	●	●	●	6.35	3.18	0.8	-
TPMR160304-MK	M	●	●	●	9.525	3.18	0.4	-
TPMR160308-MK	M	●	●	●	9.525	3.18	0.8	-
TPMN110304	-	●	●	●	6.35	3.18	0.4	-
TPMN110308	-	●	●	●	6.35	3.18	0.8	-
TPMN160304	-	●	●	●	9.525	3.18	0.4	-
TPMN160308	-	●	●	●	9.525	3.18	0.8	-
TPMN160312	-	●	●	●	9.525	3.18	1.2	-

● = NEW

● : Inventory maintained in Japan.
(10 inserts in one case)

Recommended Cutting Conditions

Negative Inserts (For External Turning)

Workpiece Material		Properties	Cutting Conditions	Grade	Cutting Speed **vc** (m/min)
K	Gray Cast Iron	Tensile Strength ≤350MPa	●	**MC5105**	230–700
			◐	**MC5105**	210–640
			✠	**MC5105**	195–605
			✠	**MC5115**	190–350
	Ductile Cast Iron	Tensile Strength ≤450MPa	●	**MC5115**	195–365
			◐	**MC5115**	180–330
			✠	**MC5125**	95–190
		Tensile Strength ≤800MPa	●	**MC5115**	175–325
			◐	**MC5115**	160–295
			✠	**MC5125**	85–170

Cutting Area	Chip Breaker	Feed **f** (mm/rev)	Depth of Cut **ap**
Light Cutting	**LK**	0.15–0.50	0.5–2.5
	SH	0.10–0.40	0.3–2.0
	SW	0.10–0.50	0.3–2.5
Medium Cutting	**MK**	0.20–0.55	0.5–4.0
	GK	0.20–0.60	1.5–5.0
	MP	0.16–0.50	0.3–4.0
	MA	0.20–0.50	0.3–4.0
	MH	0.20–0.55	1.0–4.0
	MW	0.20–0.60	0.9–4.0
Rough Cutting	**RK**	0.20–0.60	1.5–6.0
	GH	0.25–0.60	1.5–6.0
Heavy Cutting	**Flat Top**	0.20–0.60	2.5–6.0

Cutting Conditions : ● : Stable Cutting ◐ : General Cutting ✠ : Unstable Cutting

Recommended Cutting Conditions

5°, 7° Positive Inserts (For External Turning)

Workpiece Material		Properties	Cutting Conditions	Grade	Cutting Speed **vc** (m/min)
K	Gray Cast Iron	Tensile Strength ≤350MPa	●	**MC5115**	190–350
			◐	**MC5115**	140–270
			✲	**MC5115**	80–150
	Ductile Cast Iron	Tensile Strength ≤450MPa	●	**MC5115**	170–320
			◐	**MC5115**	130–250
			✲	**MC5125**	60–130
		Tensile Strength ≤800MPa	●	**MC5115**	125–240
			◐	**MC5115**	105–200
			✲	**MC5125**	55–115

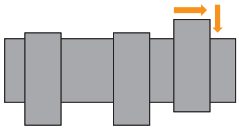
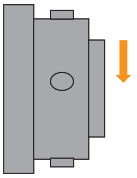
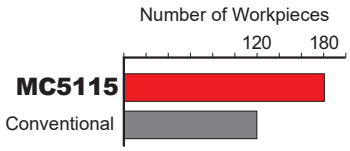
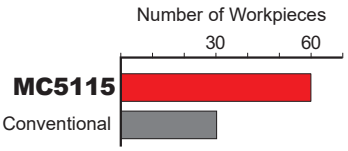
11° Positive Inserts (For External Turning)

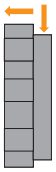
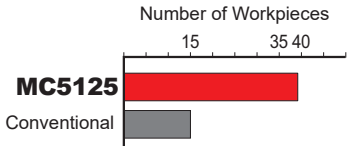
Workpiece Material		Properties	Cutting Conditions	Grade	Cutting Speed **vc** (m/min)
K	Gray Cast Iron	Tensile Strength ≤350MPa	●	**MC5115**	150–300
			◐	**MC5115**	140–270
			✲	**MC5115**	80–150
	Ductile Cast Iron	Tensile Strength ≤450MPa	●	**MC5115**	170–320
			◐	**MC5115**	130–250
			✲	**MC5125**	60–130
		Tensile Strength ≤800MPa	●	**MC5115**	125–240
			◐	**MC5115**	105–200
			✲	**MC5125**	55–115

Cutting Area	Chip Breaker	Feed **f** (mm/rev)	Depth of Cut **ap**
Light Cutting	**LK**	0.06–0.25	0.2–1.0
	SW	0.06–0.24	0.2–1.5
Medium Cutting	**MK**	0.08–0.30	0.3–2.0
	MV	0.08–0.30	0.3–2.0
	Standard	0.08–0.30	0.3–2.0
	MW	0.10–0.35	0.8–2.5
Heavy Cutting	**Flat Top**	0.08–0.30	0.3–2.0

Cutting Conditions : ● : Stable Cutting ◐ : General Cutting ✲ : Unstable Cutting

Examples of Usage

Insert		VNMG160408-GK	CNMA120412
Workpiece Material		JIS FCD700 	JIS FCD600 
Component		Automotive Parts	Automotive Parts
Application		External Turning and Facing	Facing
Cutting Conditions	Cutting Speed vc (m/min)	150	220
	Feed per Rev. f (mm/rev)	0.2-0.35	0.22-0.25
	Depth of Cut ap (mm)	1.0-3.0	2.0-2.5
Cutting Mode		Wet Cutting	–
Results		 The tool life was stable and 1.5 times longer than conventional products.	 Compared to conventional products, the amount of wear has been suppressed and the number of workpieces processed has been doubled.

Insert		CNMG120412-RK	
Workpiece Material		JIS FCD450 	
Component		Machine Parts	
Application		Rough Cutting of External and Face	
Cutting Conditions	Cutting Speed vc (m/min)	160	
	Feed per Rev. f (mm/rev)	0.2	
	Depth of Cut ap (mm)	2.5-3.5	
Cutting Mode		Wet Cutting	
Results		 It was confirmed that the fracture resistance was twice as high as that of conventional products during heavy interrupted machining.	

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

CVD Coated Grades for Cast Iron Turning

MC5100 Series

Environmentally Friendly Product

This product has been certified as an environmentally friendly product in the machine tool industry by the Japan Cutting & Wear-resistant Tool Association. This is a product unique to the industry, in harmony with the environment, and with the aim of fulfilling the social responsibilities of the machine tool industry.

The Japan Cutting & Wear-resistant Tool Association evaluates the product's environmental impact during the manufacturing and usage stages and issues a certification according to the evaluation score.

For People, Society and the Earth

More information about MITSUBISHI MATERIALS' efforts to address social and environmental issues can be found in the website below or by scanning the QR code.

https://mmc.disclosure.site/en/

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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