MITSUBISHI MITSUBISHI MATERIALS TOOLS NEWS
2017.1 Update B045G YOUR GLOBAL CRAFTSMAN STUDIO

ISO Insert Series for Heavy Cutting

Series Expansion

Specially designed for heavy cutting of stainless and alloy steels.

MC6025/MC6035
UE6110/UH6400
US735

+

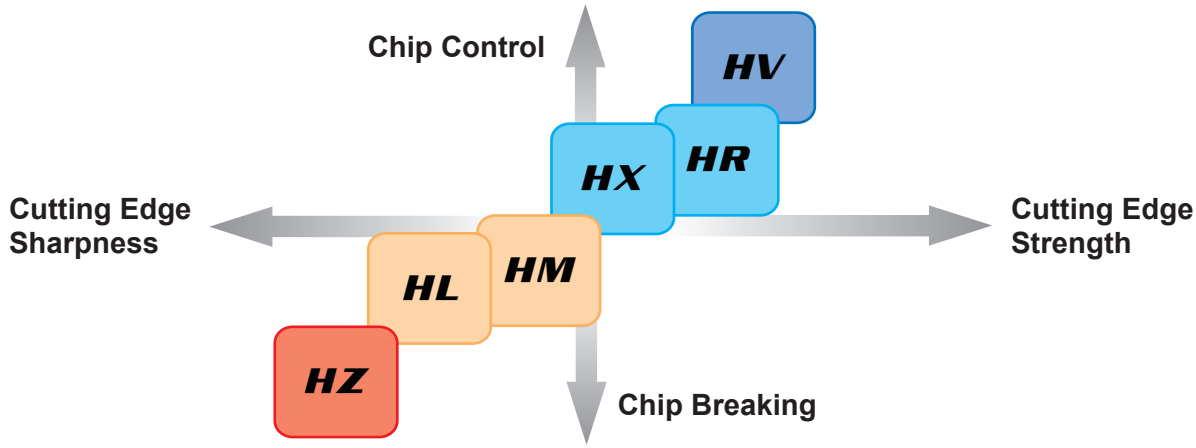
HZ/HL
HM/HX
HV/HR

ISO Insert Series for Heavy Cutting

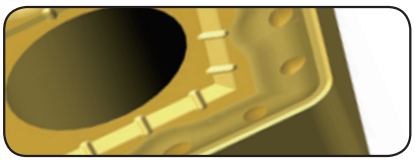
MC6025/MC6035 UE6110/UH6400 US735 + HZ/HL HM/HX HV/HR

Main Chip Breakers

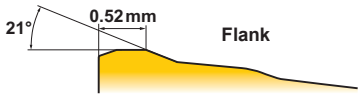
Application Area



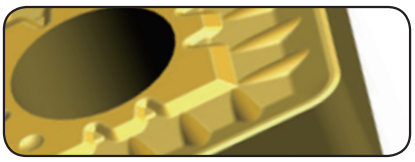
HX First Recommendation for Heavy Cutting of General Steel and Alloy Steel



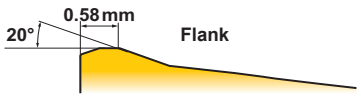
Covers the medium range of the heavy cutting region. Owing to the straight edge and chamfer gives a balance of sharpness and strength. Variable land and a wavy chip breaker for good chip control.



HR Alternative Chip Breaker for Heavy Cutting of General Steel and Alloy Steel

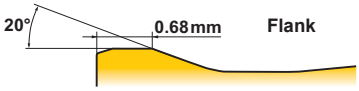


Covers the heavy cutting region by using a straight cutting edge with high edge strength.
It exhibits smooth chip control during large depths of cut and high feed rate machining.

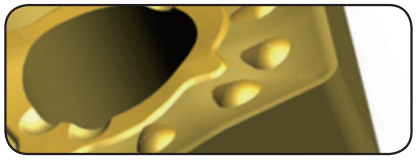


HV Alternative Chip Breaker for Heavy Cutting of General Steel and Alloy Steel

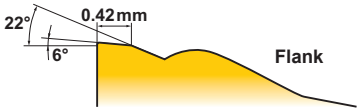
Covers the upper end of the heavy cutting region. Wide land and large chamfer offer high edge strength. A wide chip breaker prevents chip jamming.



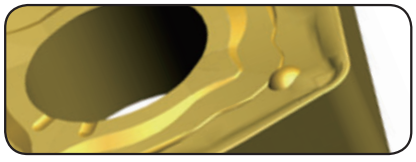
HZ Alternative Chip Breaker for Heavy Cutting of Mild Steel and Stainless Steel



Covers the lower end of the heavy cutting region. Low cutting resistance due to positive land and curved edge.Teardrop dots improve chip control without increasing cutting resistance.

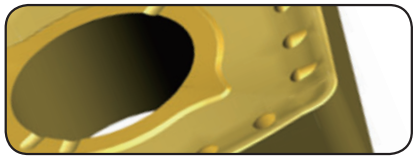


HL First Recommendation for Heavy Cutting of Mild Steel and Stainless Steel

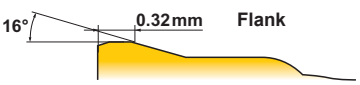


Covers the lower end of the heavy cutting region. The curved edge and narrow chamfer allow good chip control and sharp cutting action. Dots on the nose radius ensure chip control at low depths of cut.

HM Alternative Chip Breaker for Heavy Cutting of Mild Steel and Stainless Steel



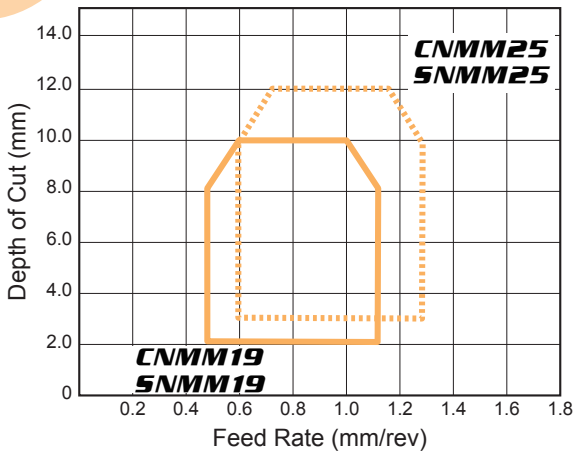
Covers the lower end through to the medium range of the heavy cutting region. The curved edge and narrow chamfer allow good chip control and sharp cutting action. Teardrop dots provided along the cutting edge ensures chip control even with variable depths of cut.



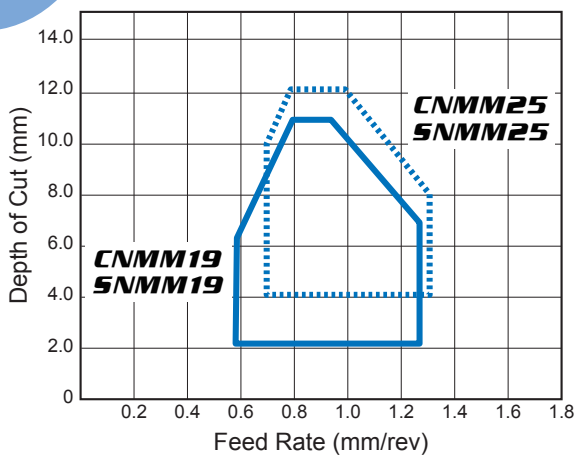
Effective Chip Control Range

<Cutting Conditions>
Work Material : AISI 4140
Cutting Speed : 150 m/min
Cutting Mode : Dry Cutting

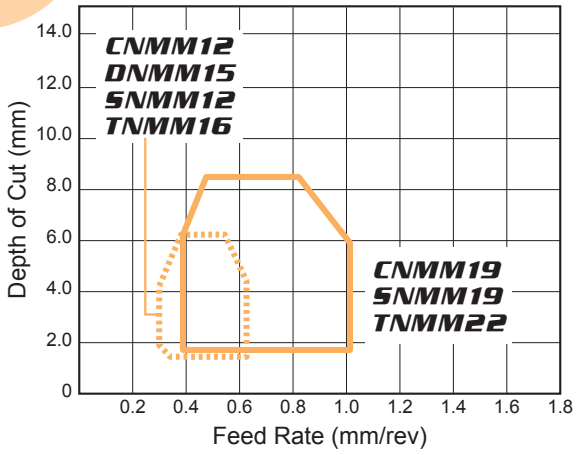
HM



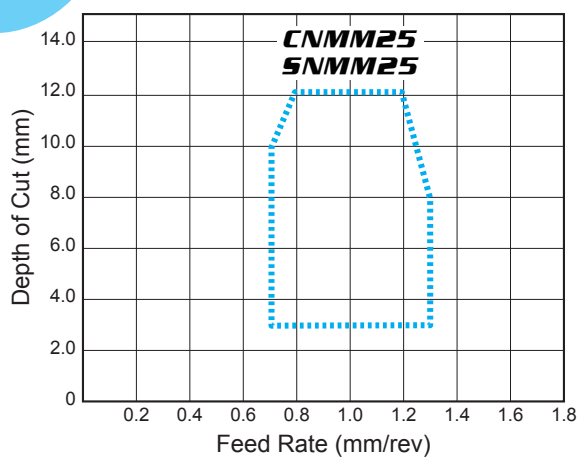
HV



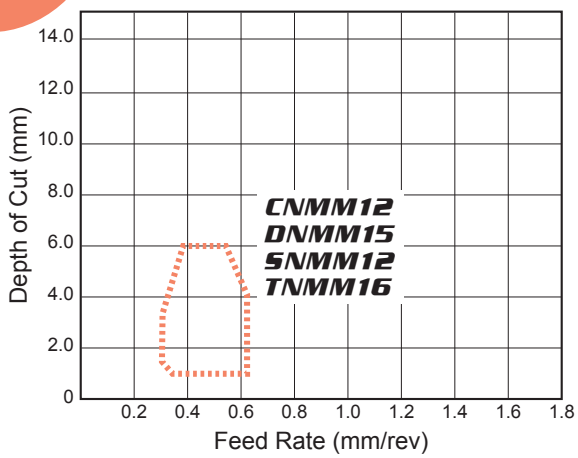
HL



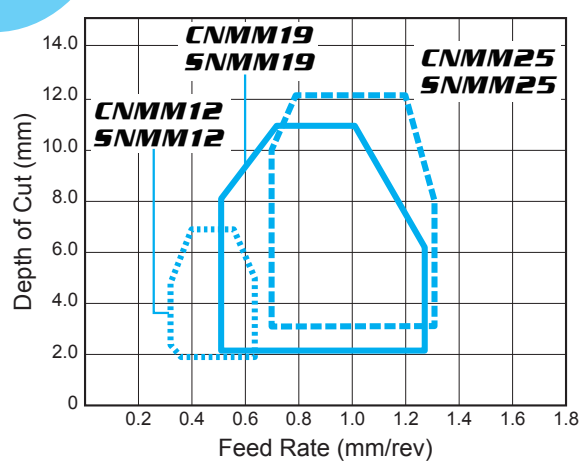
HR



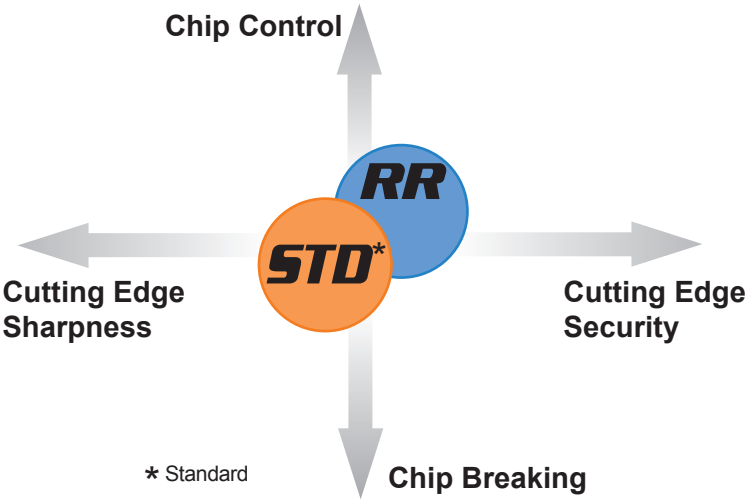
HZ



HX

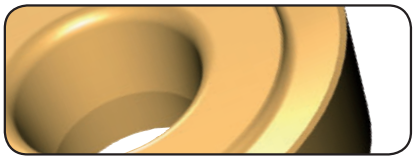


Application Area

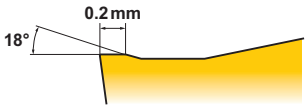


STD*

Medium Cutting of General Steel, Alloy Steel and Stainless Steel

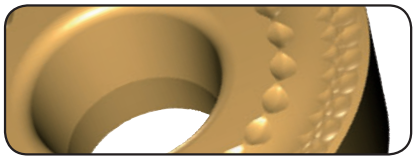


Balance of edge strength and sharpness due to a combination of a flat land and large rake angle.

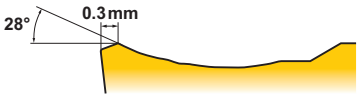


RR

Heavy Cutting of General Steel and Alloy Steel

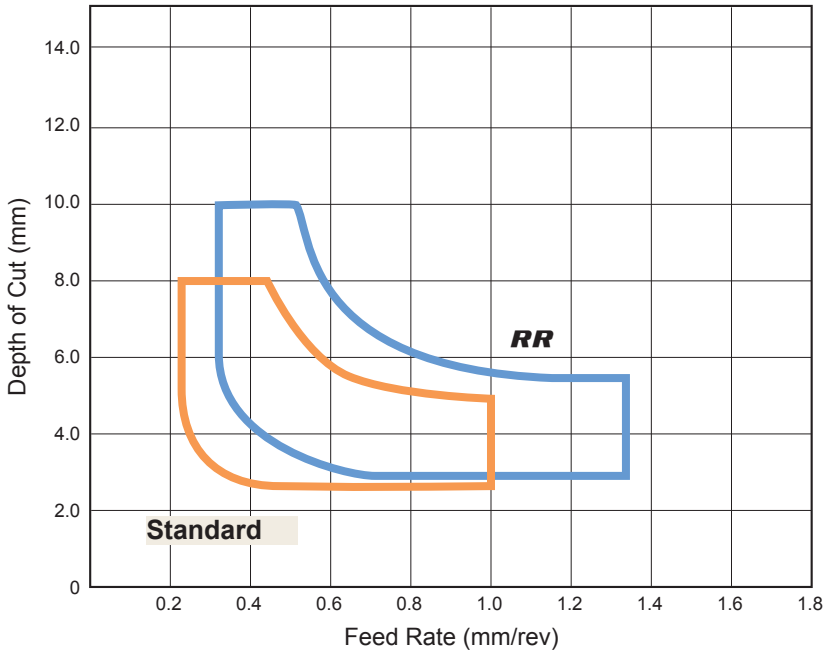


A wide groove chip breaker prevents chips from jamming at large depths of cut. Small dimples improve chip control at small depths of cut.



Effective Chip Control Range

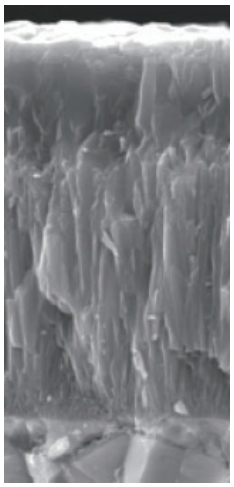
<Cutting Conditions>
Work Material : AISI 4140
Insert : RCMX2006M0-RR, Standard
Cutting Speed : 100 m/min
Cutting Mode : Dry Cutting



Recommended Insert Grades for Heavy Cutting

NEW MC6035

Prevents Severe Damage for Increased Stability

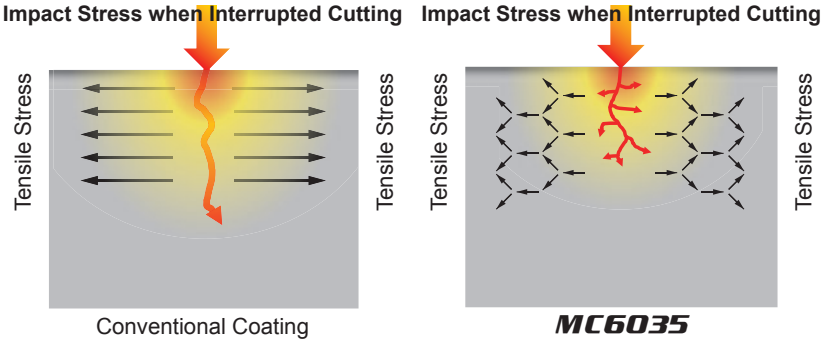


The smooth coating surface provides excellent welding resistance. With the thickened TiCN, MC6035 also achieves superior wear resistance for increased stability.

Micro-structure of *MC6035*

Reducing the Effect of Severe Fracturing

By reducing the tensile stress in the coating layer during interrupted cutting, crack development caused by impact stress is prevented.



Conventional products tend to result in fracturing because impact stress is transmitted deep into the coating layer during interrupted cutting.

MC6035 has succeeded in alleviating tensile stress in the coating layer therefore, cracks that can develop by impact stress can be prevented when interrupted cutting.

MC6025

Smooth Coating Surface

Prevents abnormal damage and weld chipping

Flat Al_2O_3

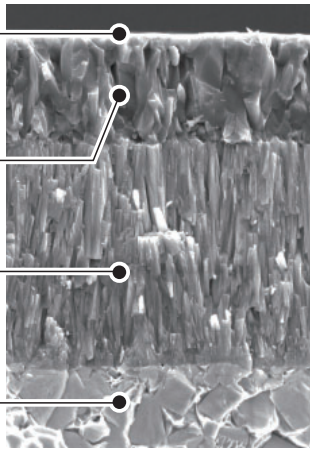
Excellent heat resistance

Microscopic TiCN

High wear resistance

Special Carbide Substrate

Prevents crack development
Stable tool life



Micro-structure of *MC6025*

The Ultimate Solution Against Crater Wear

The gold coloured top face delivers excellent heat and wear resistance. A special Ti compound layer also delivers extremely good heat resistance and further helps prevention of crater wear of the flat Al_2O_3. This makes it suitable for high speed, high efficiency machining.

2 IN 1 TECHNOLOGY

The Ultimate Solution Against Flank Wear

The flank surfaces are coated with an extremely smooth layer to prevent abnormal wear or weld chipping. Together with the microscopic TICN coating, this smooth layer ensures better component surface finishes as well as long and consistent tool life.

US735

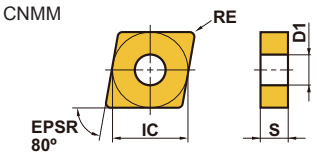
US735 solves welding problems in low speed cutting of mild steel and abnormal wear problems such as fracturing of cutting edge in medium to low speed, interrupted machining.
CVD coated carbide grade US735 is suitable not only for stainless steel but also for nickel (Ni) based super alloys, which are among the hardest of difficult-to-cut materials.

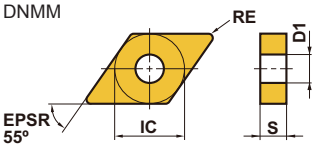
UH6400

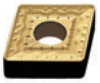
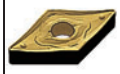
UH6400, a grade specially designed for heavy cutting. Ensuring lengthened tool life during interrupted cutting of surface scale and longer continuous cutting of pre-machined parts.

Negative Inserts (With hole)

M Class





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

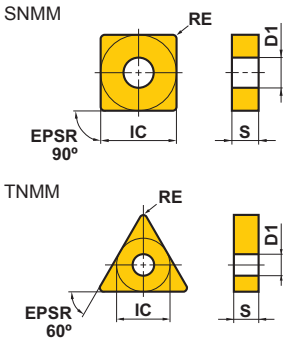
(mm)

Order Number	Cutting Area	UE6105	UE6110	MC6025	MC6035 (NEW)	UH6400	US735	IC	S	RE	D1
CNMM190616-HV	H		●	●	●	●		19.05	6.35	1.6	7.93
CNMM190624-HV	H		●	●	●	●		19.05	6.35	2.4	7.93
CNMM250924-HV	H		●	●	●	●		25.4	9.52	2.4	9.12
CNMM250924-HR	H			●	●			25.4	9.52	2.4	9.12
CNMM120408-HX	H			●	●			12.7	4.76	0.8	5.16
CNMM120412-HX	H			●	●			12.7	4.76	1.2	5.16
CNMM160612-HX	H			●	●			15.875	6.35	1.2	6.35
CNMM160616-HX	H			●	●			15.875	6.35	1.6	6.35
CNMM190612-HX	H		●	●	●	●		19.05	6.35	1.2	7.93
CNMM190616-HX	H		●	●	●	●		19.05	6.35	1.6	7.93
CNMM190624-HX	H		●	●	●	●		19.05	6.35	2.4	7.93
CNMM250924-HX	H		●	●	●	●		25.4	9.52	2.4	9.12
CNMM160612-HM	H			●	●		●	15.875	6.35	1.2	6.35
CNMM160616-HM	H			●	●		●	15.875	6.35	1.6	6.35
CNMM190612-HM	H			●	●		●	19.05	6.35	1.2	7.93
CNMM190616-HM	H			●	●		●	19.05	6.35	1.6	7.93
CNMM190624-HM	H			●	●		●	19.05	6.35	2.4	7.93
CNMM250924-HM	H			●	●			25.4	9.52	2.4	9.12
CNMM120408-HL	H			●	●		●	12.7	4.76	0.8	5.16
CNMM120412-HL	H			●	●		●	12.7	4.76	1.2	5.16
NEW CNMM120416-HL	H				●			12.7	4.76	1.6	5.16
CNMM160612-HL	H			●	●		●	15.875	6.35	1.2	6.35
CNMM160616-HL	H			●	●		●	15.875	6.35	1.6	6.35
CNMM190612-HL	H			●	●		●	19.05	6.35	1.2	7.93
CNMM190616-HL	H			●	●		●	19.05	6.35	1.6	7.93
CNMM190624-HL	H			●	●		●	19.05	6.35	2.4	7.93
CNMM120408-HZ	H		●	●	●			12.7	4.76	0.8	5.16
CNMM120412-HZ	H		●	●	●			12.7	4.76	1.2	5.16
NEW CNMM120416-HZ	H				●			12.7	4.76	1.6	5.16
CNMM160612-HZ	H		●					15.875	6.35	1.2	6.35
CNMM160616-HZ	H		●					15.875	6.35	1.6	6.35
CNMM190612-HZ	H		●			●		19.05	6.35	1.2	7.93
CNMM190616-HZ	H		●			●		19.05	6.35	1.6	7.93
DNMM150408-HL	H			●	●		●	12.7	4.76	0.8	5.16
DNMM150412-HL	H			●	●		●	12.7	4.76	1.2	5.16
DNMM150608-HL	H			●	●		●	12.7	6.35	0.8	5.16
DNMM150612-HL	H			●	●		●	12.7	6.35	1.2	5.16
DNMM150408-HZ	H		●	●	●			12.7	4.76	0.8	5.16
DNMM150412-HZ	H		●	●	●			12.7	4.76	1.2	5.16
DNMM150608-HZ	H		●	●	●			12.7	6.35	0.8	5.16
DNMM150612-HZ	H		●	●	●			12.7	6.35	1.2	5.16

● : Inventory maintained in Japan.

Negative Inserts (With hole)

M Class



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

(mm)

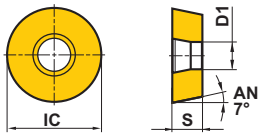
Order Number	Cutting Area	UE6105	UE6110	MC6025	MC6035 (NEW)	UH6400	US735	IC	S	RE	D1
SNMM190616-HV	H		●	●	●	●		19.05	6.35	1.6	7.93
SNMM190624-HV	H		●	●	●	●		19.05	6.35	2.4	7.93
SNMM250724-HV	H		●	●	●	●		25.4	7.94	2.4	9.12
SNMM250924-HV	H		●	●	●	●		25.4	9.52	2.4	9.12
SNMM250724-HR	H			●	●			25.4	7.94	2.4	9.12
SNMM250924-HR	H			●	●			25.4	9.52	2.4	9.12
SNMM120408-HX	H			●	●			12.7	4.76	0.8	5.16
SNMM120412-HX	H			●	●			12.7	4.76	1.2	5.16
SNMM150612-HX	H			●	●			15.875	6.35	1.2	6.35
SNMM190612-HX	H		●	●	●	●		19.05	6.35	1.2	7.93
SNMM190616-HX	H		●	●	●	●		19.05	6.35	1.6	7.93
SNMM190624-HX	H		●	●	●	●		19.05	6.35	2.4	7.93
SNMM250724-HX	H		●	●	●	●		25.4	7.94	2.4	9.12
SNMM250924-HX	H		●	●	●	●		25.4	9.52	2.4	9.12
SNMM150612-HM	H			●	●		●	15.875	6.35	1.2	6.35
SNMM190612-HM	H			●	●		●	19.05	6.35	1.2	7.93
SNMM190616-HM	H			●	●		●	19.05	6.35	1.6	7.93
SNMM190624-HM	H			●	●		●	19.05	6.35	2.4	7.93
SNMM250724-HM	H			●	●			25.4	7.94	2.4	9.12
SNMM250924-HM	H			●	●			25.4	9.52	2.4	9.12
SNMM120408-HL	H			●	●		●	12.7	4.76	0.8	5.16
SNMM120412-HL	H			●	●		●	12.7	4.76	1.2	5.16
SNMM150612-HL	H			●	●		●	15.875	6.35	1.2	6.35
SNMM190612-HL	H			●	●		●	19.05	6.35	1.2	7.93
SNMM190616-HL	H			●	●		●	19.05	6.35	1.6	7.93
SNMM190624-HL	H			●	●		●	19.05	6.35	2.4	7.93
SNMM120408-HZ	H		●	●	●			12.7	4.76	0.8	5.16
SNMM120412-HZ	H		●	●	●			12.7	4.76	1.2	5.16
SNMM150612-HZ	H		●					15.875	6.35	1.2	6.35
SNMM190612-HZ	H		●			●		19.05	6.35	1.2	7.93
SNMM190616-HZ	H		●			●		19.05	6.35	1.6	7.93
TNMM160408-HL	H			●	●		●	9.525	4.76	0.8	3.81
TNMM160412-HL	H			●	●		●	9.525	4.76	1.2	3.81
TNMM220408-HL	H			●	●		●	12.7	4.76	0.8	5.16
TNMM220412-HL	H			●	●		●	12.7	4.76	1.2	5.16
TNMM220416-HL	H			●	●		●	12.7	4.76	1.6	5.16
TNMM160408-HZ	H		●	●	●			9.525	4.76	0.8	3.81
TNMM160412-HZ	H			●	●			9.525	4.76	1.2	3.81
TNMM220408-HZ	H		●					12.7	4.76	0.8	5.16
TNMM220412-HZ	H		●					12.7	4.76	1.2	5.16
TNMM220416-HZ	H		●					12.7	4.76	1.6	5.16

7° Positive Inserts (With hole)

M Class

Heavy	Medium
RR	Standard
	

RCMX



(mm)

Order Number	Cutting Area	UE6105	UE6110	MC6025	MC6035 (NEW)	UH6400	US735	IC	S	RE	D1
RCMX1606M0-RR	H		●	●		●	●	16	6.35	—	5.2
RCMX2006M0-RR	H		●	●		●	●	20	6.35	—	6.5
RCMX2507M0-RR	H		●	●		●	●	25	7.94	—	7.2
RCMX3209M0-RR	H		●					32	9.52	—	9.5
RCMX1003M0	M		●	●			●	10	3.18	—	3.6
RCMX1204M0	M	●	●	●			●	12	4.76	—	4.2
RCMX1606M0	M	●	●	●		●	●	16	6.35	—	5.2
RCMX2006M0	M	●	●	●		●	●	20	6.35	—	6.5
RCMX2507M0	M	●	●	●				25	7.94	—	7.2
RCMX3209M0	M	●	●					32	9.52	—	9.5

● : Inventory maintained in Japan.

Memo

Recommended Cutting Conditions

(mm)

Work Material		Hardness	Cutting Conditions	Grade	Breaker	vc (m/min)	f (mm/rev)	ap
P	Carbon Steel and Alloy Steel	180-280 HB	Stable Cutting	UE6110	HX	165—280	0.50—1.26	3.00—11.00
					HV	135—230	0.70—1.30	4.00—12.00
					HZ	165—280	0.40—1.20	2.00—10.00
					HL	165—280	0.40—1.00	1.50—8.00
					HM	165—280	0.50—1.10	2.00—10.00
			General Cutting	MC6025	HX	165—265	0.50—1.26	3.00—11.00
					HV	135—220	0.70—1.30	4.00—12.00
					HZ	165—265	0.40—1.20	2.00—10.00
					HL	165—265	0.40—1.00	1.50—8.00
					HM	165—265	0.50—1.10	2.00—10.00
					HR	135—220	0.70—1.30	3.00—12.00
				UE6110	HZ	165—280	0.40—1.20	2.00—10.00
			Unstable Cutting	MC6035	HX	140—200	0.50—1.26	3.00—11.00
					HV	115—165	0.70—1.30	4.00—12.00
					HZ	140—200	0.40—1.20	2.00—10.00
					HL	140—200	0.40—1.00	1.50—8.00
					HM	140—200	0.50—1.10	2.00—10.00
					HR	115—165	0.70—1.30	3.00—12.00
				UH6400	HX	140—195	0.50—1.26	3.00—11.00
					HV	115—160	0.70—1.30	4.00—12.00
					HZ	140—195	0.40—1.20	2.00—10.00

(mm)

	Work Material	Hardness	Cutting Conditions	Grade	Breaker	vc (m/min)	f (mm/rev)	ap
M	Austenitic Stainless Steel	≤ 200 HB	Stable Cutting	US735	HL	75—140	0.40—1.00	1.50—8.00
			General Cutting	US735	HL	75—140	0.40—1.00	1.50—8.00
					HM	75—140	0.50—1.10	2.00—10.00
			Unstable Cutting	US735	HL	75—140	0.40—1.00	1.50—8.00
					HM	75—140	0.50—1.10	2.00—10.00
	Austenitic Stainless Steel	> 200 HB	Stable Cutting	US735	HL	60—120	0.40—1.00	1.50—8.00
					HM	60—120	0.50—1.10	2.00—10.00
			General Cutting	US735	HL	60—120	0.40—1.00	1.50—8.00
					HM	60—120	0.50—1.10	2.00—10.00
			Unstable Cutting	US735	HL	60—120	0.40—1.00	1.50—8.00
					HM	60—120	0.50—1.10	2.00—10.00
	Two-phase Stainless Steel	≤ 280 HB	Stable Cutting	US735	HL	50—95	0.40—1.00	1.50—8.00
					HM	50—95	0.50—1.10	2.00—10.00
			General Cutting	US735	HL	50—95	0.40—1.00	1.50—8.00
					HM	50—95	0.50—1.10	2.00—10.00
			Unstable Cutting	US735	HL	50—95	0.40—1.00	1.50—8.00
					HM	50—95	0.50—1.10	2.00—10.00
	Ferritic and Martensitic Stainless Steels	≤ 200 HB	Stable Cutting	US735	HL	75—140	0.40—1.00	1.50—8.00
					HM	75—140	0.50—1.10	2.00—10.00
			General Cutting	US735	HL	75—140	0.40—1.00	1.50—8.00
					HM	75—140	0.50—1.10	2.00—10.00
			Unstable Cutting	US735	HL	75—140	0.40—1.00	1.50—8.00
					HM	75—140	0.50—1.10	2.00—10.00
	Ferritic and Martensitic Stainless Steels	> 200 HB	Stable Cutting	US735	HL	60—120	0.40—1.00	1.50—8.00
					HM	60—120	0.50—1.10	2.00—10.00
			General Cutting	US735	HL	60—120	0.40—1.00	1.50—8.00
					HM	60—120	0.50—1.10	2.00—10.00
			Unstable Cutting	US735	HL	60—120	0.40—1.00	1.50—8.00
					HM	60—120	0.50—1.10	2.00—10.00
	Precipitation Hardening Stainless	< 450 HB	Stable Cutting	US735	HL	40—80	0.40—1.00	1.50—8.00
					HM	40—80	0.50—1.10	2.00—10.00
			General Cutting	US735	HL	40—80	0.40—1.00	1.50—8.00
					HM	40—80	0.50—1.10	2.00—10.00
			Unstable Cutting	US735	HL	40—80	0.40—1.00	1.50—8.00
					HM	40—80	0.50—1.10	2.00—10.00

ISO Insert Series for Heavy Cutting

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

MITSUBISHI MATERIALS CORPORATION

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(Tools specifications subject to change without notice.)

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