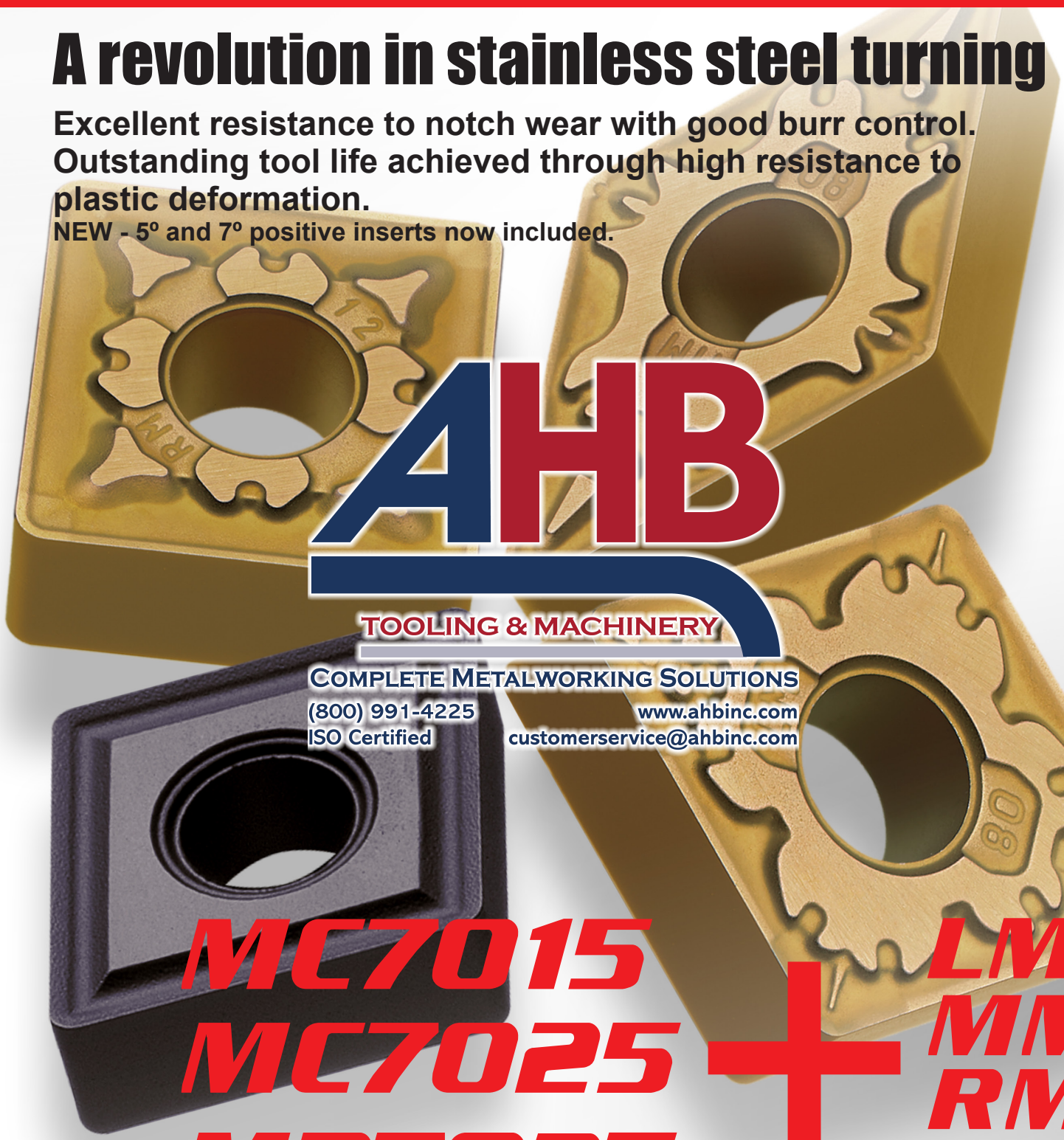
# 7000 Series Grades for Stainless Steel Turning

Series Expansion

## A revolution in stainless steel turning

**Excellent resistance to notch wear with good burr control. Outstanding tool life achieved through high resistance to plastic deformation.**

**NEW - 5º and 7º positive inserts now included.**





**MC7015**
**MC7025**
**MP7035**

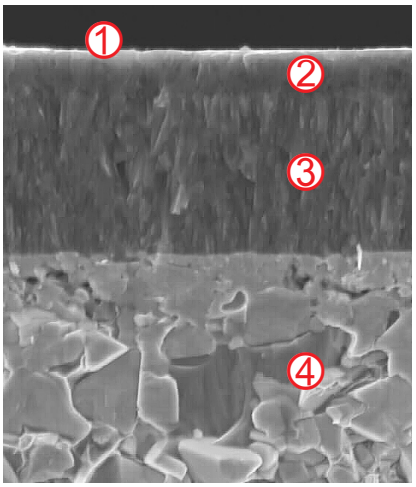
+

**LM**
**MM**
**RM**
**GM**

# 7000 Series Grades for Stainless Steel Turning

## CVD coated grade

## MC7015/MC7025




①Smooth cutting edge
Prevents chip welding

②Thin layer,
Nano-texture $Al_2O_3$
Controls abnormal damage

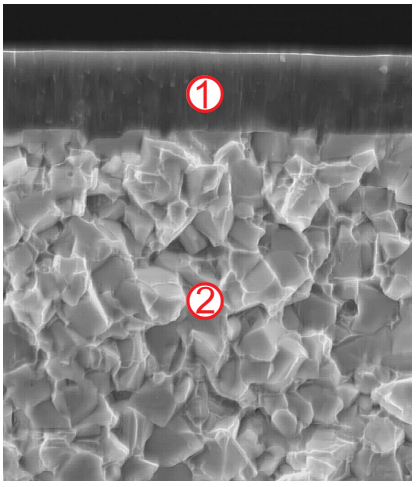
③Tough,
Nano-texture TiCN
High wear resistance

④Special carbide substrate
Resists chipping & plastic deformation

Newly developed

## PVD coated grade

## MP7035



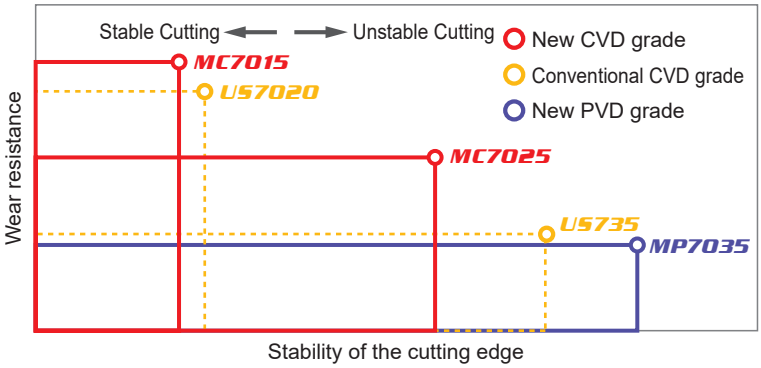

①(Al, Ti)N coating
Prevents chip welding

②Special carbide substrate
Improved fracture & thermal shock resistance

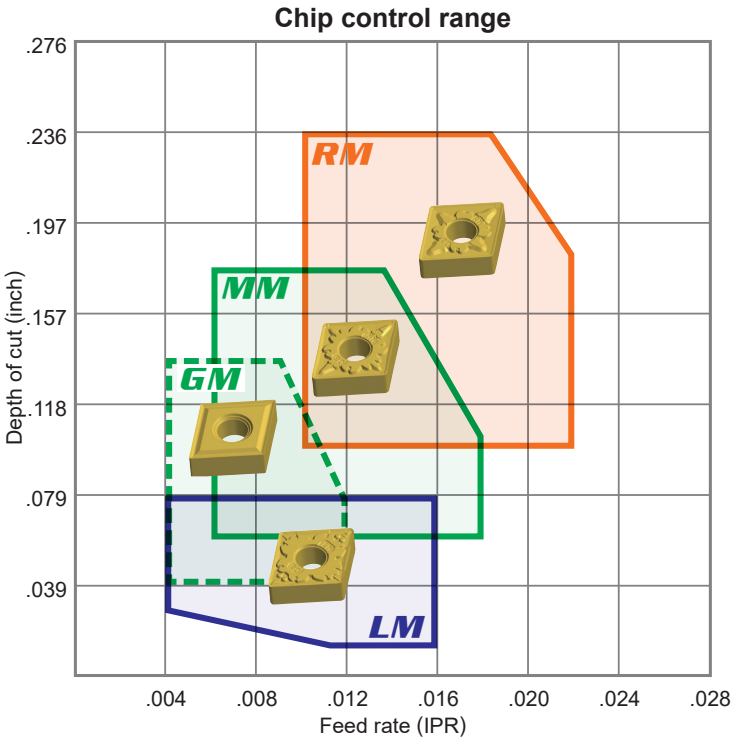
## Application range

| ISO Category Codes | Stainless Steel |
|---|---|
| M01 | NEW MC7015 |
| M10 | |
| M20 | NEW MC7025 |
| M30 | NEW MP7035 |
| M40 | |

## Concept of grade



# Breaker system for stainless steel turning (Negative inserts)




## M Stainless Steel

Negative insert for external turning

| | Light Cutting | Medium Cutting | Rough Cutting |
|---|---|---|---|
| ● | LM MC7015 | MM MC7015 | RM MC7015 |
| ◔ | LM MC7025 | MM MC7025 | RM MC7025 |
| ✣ | LM MP7035 | MM MP7035 | RM MP7035 |

### CUTTING CONDITIONS

**Stable Cutting**

Continuous Cutting
Constant Depth of Cut
Pre-machined Surfaces
Securely Clamped Component Cutting

**General Cutting**

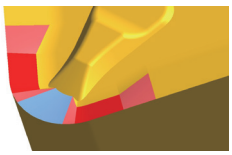
**Unstable Cutting**

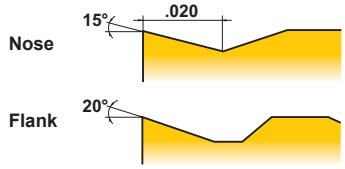
Heavy Interrupted Cutting
Irregular Depth of Cut
Low Clamping Rigidity Cutting

# Main breaker

## LM breaker for light cutting

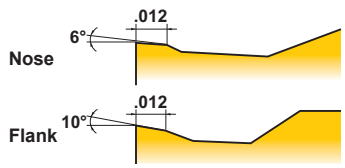
**Excellent burr control**
Cutting edge sharpness and strength are optimized with varying rake angles drastically reducing the incidence of burrs.





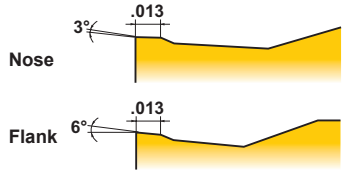

## MM breaker for medium cutting

**Excellent resistance to plastic deformation**
Simulation analysis technology yielded the optimum land geometry, controlling plastic deformation and providing increased tool life.




## RM breaker for rough cutting

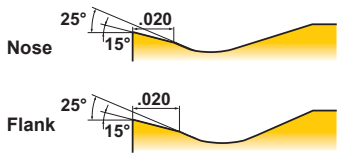
**Excellent fracture resistance**
During interrupted machining, high cutting edge stability is achieved through optimized edge land angle and hone.




## Sub breaker

### GM breaker

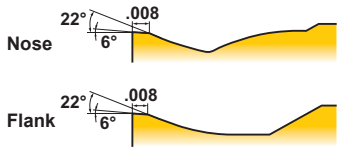
Sub breaker of the main LM and MM chip breaker.
Excellent in notching resistance for light cutting to medium cutting.



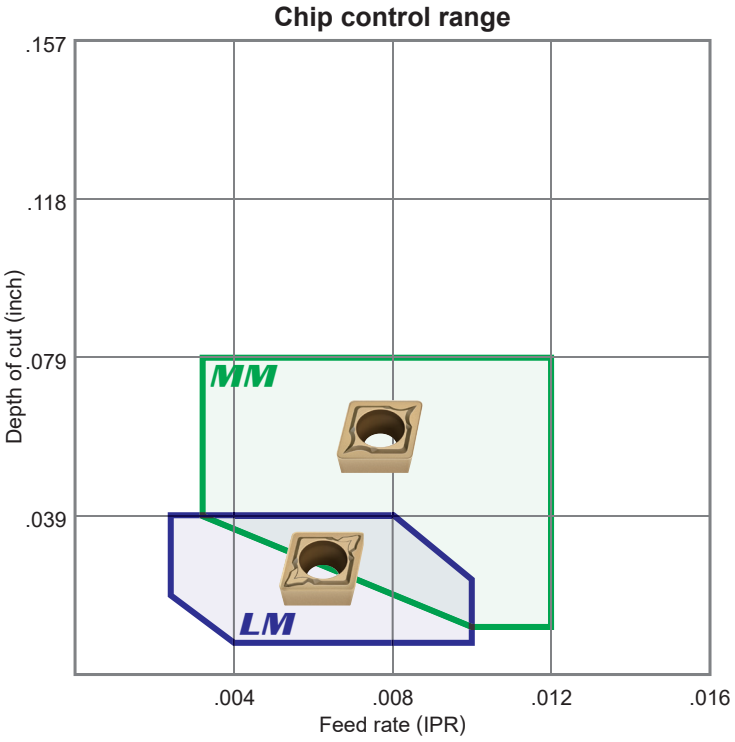

## Multi-Assist breaker

### MA breaker

Suitable for medium cutting range.



# Breaker system for stainless steel turning (Positive inserts)





## CUTTING CONDITIONS

**Stable Cutting**

Continuous Cutting
Constant Depth of Cut
Pre-machined Surfaces
Securely Clamped Component Cutting

**General Cutting**

**Unstable Cutting**

Heavy Interrupted Cutting
Irregular Depth of Cut
Low Clamping Rigidity Cutting

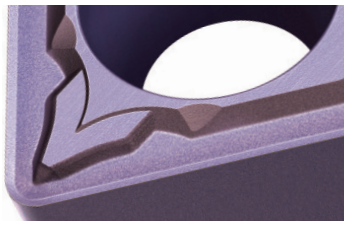
# Main breaker

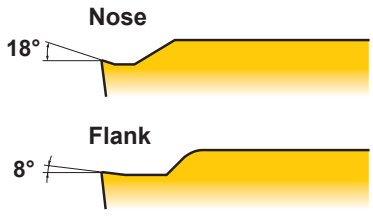
## LM breaker for light cutting

**First recommendation for light cutting of stainless steel**

A high rake angle provides a sharp cutting edge preventing chip welding which, in turn, helps maintain surface finish. The chip breaking peninsula provides a wide range of chip control.

5° 7° Positive Insert



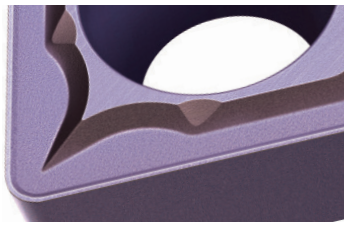


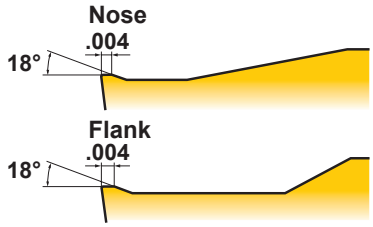

## MM breaker for medium cutting

**First recommendation for medium cutting of stainless steel**

The flat land provides a good balance of wear and fracture resistance. The wide pocket reduces vibration and chip jamming and also prevents increases in cutting resistance even at large depths of cut.

5° 7° Positive Insert



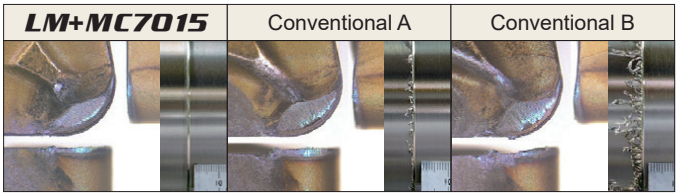


# Cutting performance

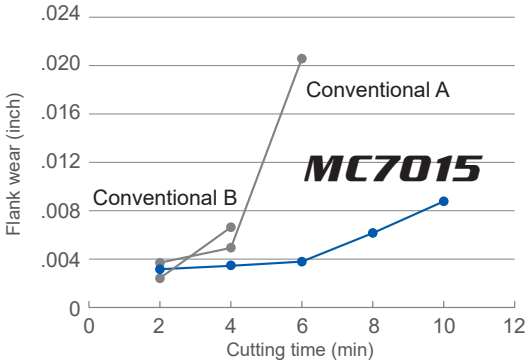
## MC7015

### Wear resistance comparison

Tool life comparison was made at a 1mm depth of cut where burrs were most likely to occur.
MC7015 grade with the LM chipbreaker demonstrated good burr control and long tool life.

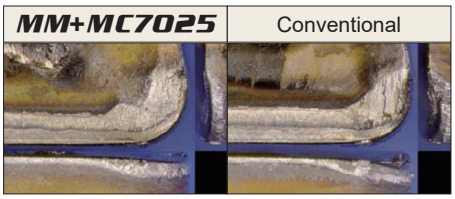



<Cutting conditions>
Inserts : CNMG432◯◯
Work piece : ANSI 304
Cutting speed : 985 SFM
Feed rate : .008 IPR
Depth of cut : .039 inch
Coolant : Wet cutting

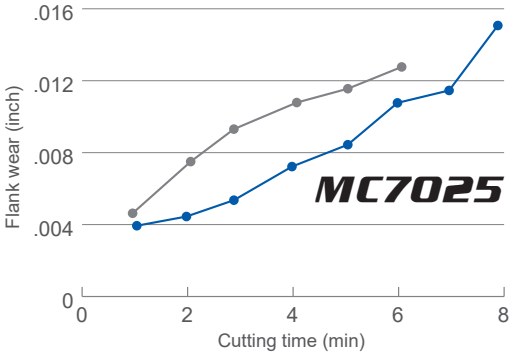



## MC7025

### Wear resistance comparison

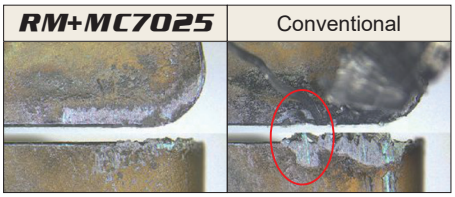



<Cutting conditions>
Inserts : CNMG432◯◯
Work piece : AISI 304
Cutting speed : 590 SFM
Feed rate : .014 IPR
Depth of cut : .157 inch
Coolant : Wet cutting



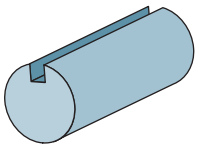

### Fracture resistance comparison

Fracture resistance was tested by turning a component with a slot.
(Impact frequency: 150/pass)




Notch wear and large welding

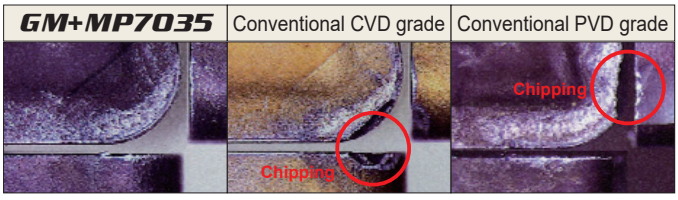
<Cutting conditions>
Inserts : CNMG432◯◯
Work piece : ANSI 304
Cutting speed : 395 SFM
Feed rate : .012 IPR
Depth of cut : .079 inch
Coolant : Wet cutting



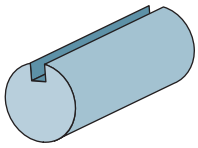
## MP7035

### Fracture resistance comparison

Fracture resistance was tested by turning a component with a slot.
(Impact frequency: 300/pass)

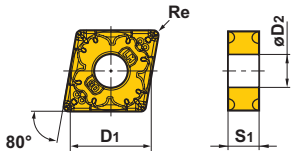
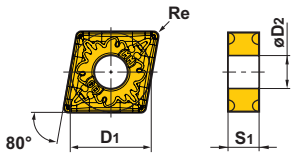
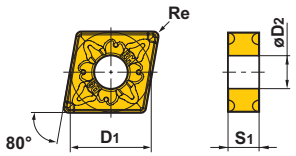
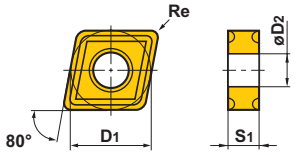
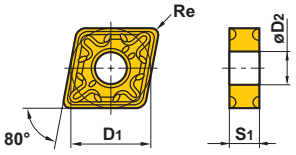
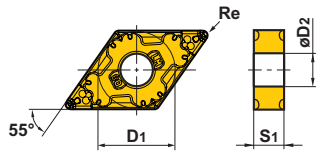
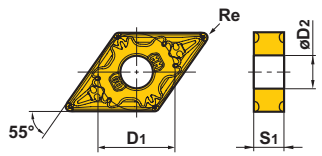



<Cutting conditions>
Inserts : CNMG432◯◯
Work piece : ANSI 316
Cutting speed : 165 SFM
Feed rate : .006 IPR
Depth of cut : .039 inch
Coolant : Wet cutting

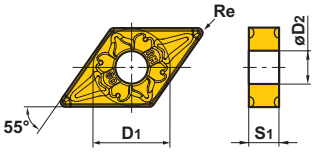
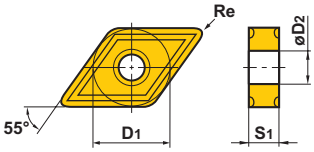
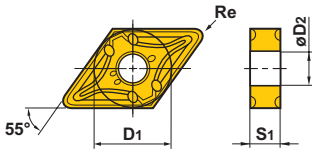
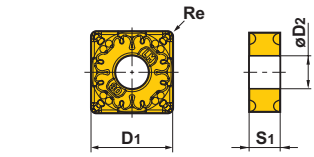
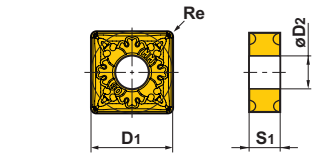
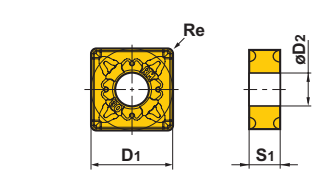
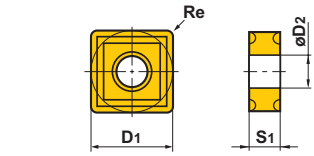


## INSERTS

### ● Negative Inserts (With hole)

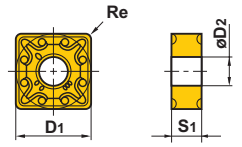
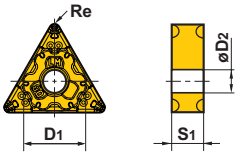
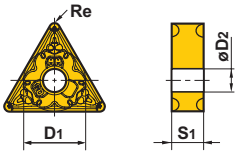
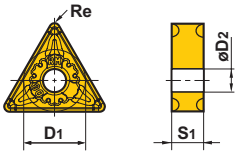
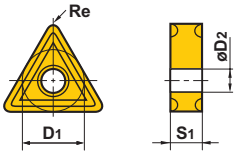
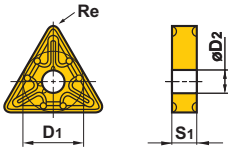
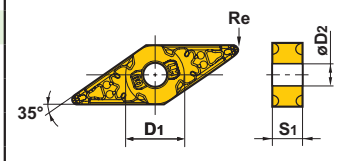
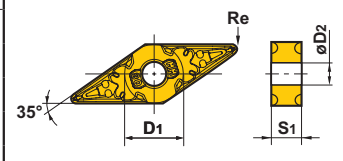
| Shape | Order Number | (ISO) Number | Stock | | | Dimensions (inch) | | | | Geometry |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | MC7015 | MC7025 | MP7035 | D1 | S1 | Re | D2 | |
| **LM** | **CNMG431LM** | **CNMG120404-LM** | ● | ● | ● | .500 | .187 | .016 | .203 |  |
| | **432LM** | **120408-LM** | ● | ● | ● | .500 | .187 | .031 | .203 | |
| | **433LM** | **120412-LM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
| Light Cutting | | | | | | | | | | |
| **MM** | **CNMG432MM** | **CNMG120408-MM** | ● | ● | ● | .500 | .187 | .031 | .203 |  |
| | **433MM** | **120412-MM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
| | **434MM** | **120416-MM** | ● | ● | ● | .500 | .187 | .063 | .203 | |
| | **542MM** | **160608-MM** | ● | ● | ● | .625 | .250 | .031 | .250 | |
| | **543MM** | **160612-MM** | ● | ● | ● | .625 | .250 | .047 | .250 | |
| | **544MM** | **160616-MM** | ● | ● | ● | .625 | .250 | .063 | .250 | |
| | **642MM** | **190608-MM** | ● | ● | ● | .750 | .250 | .031 | .312 | |
| | **643MM** | **190612-MM** | ● | ● | ● | .750 | .250 | .047 | .312 | |
| Medium Cutting | **644MM** | **190616-MM** | ● | ● | ● | .750 | .250 | .063 | .312 | |
| **RM** | **CNMG432RM** | **CNMG120408-RM** | ● | ● | ● | .500 | .187 | .031 | .203 |  |
| | **433RM** | **120412-RM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
| | **434RM** | **120416-RM** | ● | ● | ● | .500 | .187 | .063 | .203 | |
| | **543RM** | **160612-RM** | ● | ● | ● | .625 | .250 | .047 | .250 | |
| | **544RM** | **160616-RM** | ● | ● | ● | .625 | .250 | .063 | .250 | |
| | **643RM** | **190612-RM** | ● | ● | ● | .750 | .250 | .047 | .312 | |
| Rough Cutting | **644RM** | **190616-RM** | ● | ● | ● | .750 | .250 | .063 | .312 | |
| **GM** | **CNMG431GM** | **CNMG120404-GM** | ● | ● | ● | .500 | .187 | .016 | .203 |  |
| | **432GM** | **120408-GM** | ● | ● | ● | .500 | .187 | .031 | .203 | |
| | **433GM** | **120412-GM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
| Medium Cutting | | | | | | | | | | |
| **MA** | **CNMG431MA** | **CNMG120404-MA** | | ● | ● | .500 | .187 | .016 | .203 |  |
| | **432MA** | **120408-MA** | | ● | ● | .500 | .187 | .031 | .203 | |
| | **433MA** | **120412-MA** | | ● | ● | .500 | .187 | .047 | .203 | |
| Medium Cutting | | | | | | | | | | |
| **LM** | **DNMG331LM** | **DNMG110404-LM** | ● | ● | ● | .375 | .187 | .016 | .150 |  |
| | **332LM** | **110408-LM** | ● | ● | ● | .375 | .187 | .031 | .150 | |
| | **431LM** | **150404-LM** | ● | ● | ● | .500 | .187 | .016 | .203 | |
| | **432LM** | **150408-LM** | ● | ● | ● | .500 | .187 | .031 | .203 | |
| | **433LM** | **150412-LM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
| | **441LM** | **150604-LM** | ● | ● | ● | .500 | .250 | .016 | .203 | |
| | **442LM** | **150608-LM** | ● | ● | ● | .500 | .250 | .031 | .203 | |
| Light Cutting | **443LM** | **150612-LM** | ● | ● | ● | .500 | .250 | .047 | .203 | |
| **MM** | **DNMG432MM** | **DNMG150408-MM** | ● | ● | ● | .500 | .187 | .031 | .203 |  |
| | **433MM** | **150412-MM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
| | **442MM** | **150608-MM** | ● | ● | ● | .500 | .250 | .031 | .203 | |
| | **443MM** | **150612-MM** | ● | ● | ● | .500 | .250 | .047 | .203 | |
| Medium Cutting | | | | | | | | | | |

● : Inventory maintained.

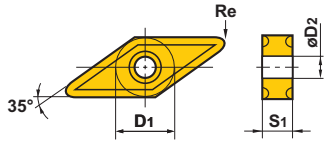
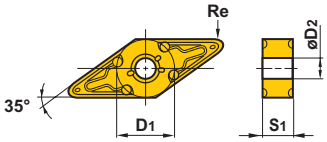
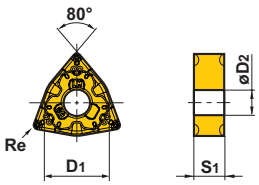
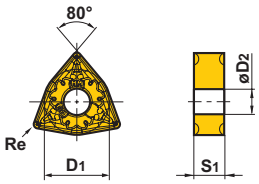
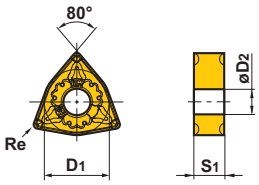
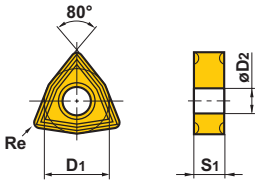
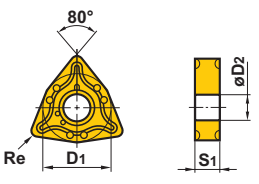
| Shape | Order Number | (ISO) Number | Stock | | | Dimensions (inch) | | | | Geometry |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | MC7015 | MC7025 | MP7035 | D1 | S1 | Re | D2 | |
| **RM** | **DNMG432RM** | **DNMG150408-RM** | ● | ● | ● | .500 | .187 | .031 | .203 |  |
| | **433RM** | **150412-RM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
| | **434RM** | **150416-RM** | ● | ● | ● | .500 | .187 | .063 | .203 | |
| | **442RM** | **150608-RM** | ● | ● | ● | .500 | .250 | .031 | .203 | |
| | **443RM** | **150612-RM** | ● | ● | ● | .500 | .250 | .047 | .203 | |
| Rough Cutting | **444RM** | **150616-RM** | ● | ● | ● | .500 | .250 | .063 | .203 | |
| **GM** | **DNMG431GM** | **DNMG150404-GM** | ● | ● | ● | .500 | .187 | .016 | .203 |  |
| | **432GM** | **150408-GM** | ● | ● | ● | .500 | .187 | .031 | .203 | |
| | **433GM** | **150412-GM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
| | **441GM** | **150604-GM** | ● | ● | ● | .500 | .250 | .016 | .203 | |
| | **442GM** | **150608-GM** | ● | ● | ● | .500 | .250 | .031 | .203 | |
| Medium Cutting | **443GM** | **150612-GM** | ● | ● | ● | .500 | .250 | .047 | .203 | |
| **MA** | **DNMG431MA** | **DNMG150404-MA** | | ● | ● | .500 | .187 | .016 | .203 |  |
| | **432MA** | **150408-MA** | | ● | ● | .500 | .187 | .031 | .203 | |
| | **433MA** | **150412-MA** | | ● | ● | .500 | .187 | .047 | .203 | |
| | **441MA** | **150604-MA** | | ● | ● | .500 | .250 | .016 | .203 | |
| | **442MA** | **150608-MA** | | ● | ● | .500 | .250 | .031 | .203 | |
| Medium Cutting | **443MA** | **150612-MA** | | ● | ● | .500 | .250 | .047 | .203 | |
| **LM** | **SNMG431LM** | **SNMG120404-LM** | ● | ● | ● | .500 | .187 | .016 | .203 |  |
| | **432LM** | **120408-LM** | ● | ● | ● | .500 | .187 | .031 | .203 | |
| Light Cutting | | | | | | | | | | |
| **MM** | **SNMG432MM** | **SNMG120408-MM** | ● | ● | ● | .500 | .187 | .031 | .203 |  |
| | **433MM** | **120412-MM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
| | **434MM** | **120416-MM** | ● | ● | ● | .500 | .187 | .063 | .203 | |
| | **542MM** | **150608-MM** | ● | ● | ● | .625 | .250 | .031 | .250 | |
| | **543MM** | **150612-MM** | ● | ● | ● | .625 | .250 | .047 | .250 | |
| | **544MM** | **150616-MM** | ● | ● | ● | .625 | .250 | .063 | .250 | |
| | **643MM** | **190612-MM** | ● | ● | ● | .750 | .250 | .047 | .312 | |
| Medium Cutting | **644MM** | **190616-MM** | ● | ● | ● | .750 | .250 | .063 | .312 | |
| **RM** | **SNMG432RM** | **SNMG120408-RM** | ● | ● | ● | .500 | .187 | .031 | .203 |  |
| | **433RM** | **120412-RM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
| | **434RM** | **120416-RM** | ● | ● | ● | .500 | .187 | .063 | .203 | |
| | **543RM** | **150612-RM** | ● | ● | ● | .625 | .250 | .047 | .250 | |
| | **544RM** | **150616-RM** | ● | ● | ● | .625 | .250 | .063 | .250 | |
| | **643RM** | **190612-RM** | ● | ● | ● | .750 | .250 | .047 | .312 | |
| Rough Cutting | **644RM** | **190616-RM** | ● | ● | ● | .750 | .250 | .063 | .312 | |
| **GM** | **SNMG431GM** | **SNMG120404-GM** | ● | ● | ● | .500 | .187 | .016 | .203 |  |
| | **432GM** | **120408-GM** | ● | ● | ● | .500 | .187 | .031 | .203 | |
| | **433GM** | **120412-GM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
| Medium Cutting | | | | | | | | | | |

## INSERTS

### ● Negative Inserts (With hole)

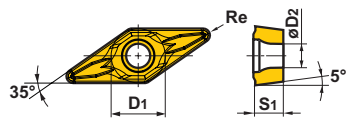
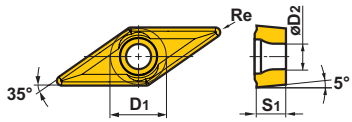
| Shape | Order Number | (ISO) Number | Stock | | | Dimensions (inch) | | | | Geometry |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | MC7015 | MC7025 | MP7035 | D1 | S1 | Re | D2 | |
| **MA** | **SNMG431MA** | **SNMG120404-MA** | | ● | ● | .500 | .187 | .016 | .203 |  |
| | **432MA** | **120408-MA** | | ● | ● | .500 | .187 | .031 | .203 | |
| | **433MA** | **120412-MA** | | ● | ● | .500 | .187 | .047 | .203 | |
|  Medium Cutting | | | | | | | | | | |
| **LM** | **TNMG331LM** | **TNMG160404-LM** | ● | ● | ● | .375 | .187 | .016 | .150 |  |
| | **332LM** | **160408-LM** | ● | ● | ● | .375 | .187 | .031 | .150 | |
| | **333LM** | **160412-LM** | ● | ● | ● | .375 | .187 | .047 | .150 | |
|  Light Cutting | | | | | | | | | | |
| **MM** | **TNMG332MM** | **TNMG160408-MM** | ● | ● | ● | .375 | .187 | .031 | .150 |  |
| | **333MM** | **160412-MM** | ● | ● | ● | .375 | .187 | .047 | .150 | |
| | **432MM** | **220408-MM** | ● | ● | ● | .500 | .187 | .031 | .203 | |
| | **433MM** | **220412-MM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
| | **434MM** | **220416-MM** | ● | ● | ● | .500 | .187 | .063 | .203 | |
|  Medium Cutting | | | | | | | | | | |
| **RM** | **TNMG332RM** | **TNMG160408-RM** | ● | ● | ● | .375 | .187 | .031 | .150 |  |
| | **333RM** | **160412-RM** | ● | ● | ● | .375 | .187 | .047 | .150 | |
| | **432RM** | **220408-RM** | ● | ● | ● | .500 | .187 | .031 | .203 | |
| | **433RM** | **220412-RM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
| | **434RM** | **220416-RM** | ● | ● | ● | .500 | .187 | .063 | .203 | |
|  Rough Cutting | | | | | | | | | | |
| **GM** | **TNMG331GM** | **TNMG160404-GM** | ● | ● | ● | .375 | .187 | .016 | .150 |  |
| | **332GM** | **160408-GM** | ● | ● | ● | .375 | .187 | .031 | .150 | |
| | **333GM** | **160412-GM** | ● | ● | ● | .375 | .187 | .047 | .150 | |
| | **432GM** | **220408-GM** | ● | ● | ● | .500 | .187 | .031 | .203 | |
| | **433GM** | **220412-GM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
|  Medium Cutting | | | | | | | | | | |
| **MA** | **TNMG331MA** | **TNMG160404-MA** | | ● | ● | .375 | .187 | .016 | .150 |  |
| | **332MA** | **160408-MA** | | ● | ● | .375 | .187 | .031 | .150 | |
| | **333MA** | **160412-MA** | | ● | ● | .375 | .187 | .047 | .150 | |
| | **432MA** | **220408-MA** | | ● | ● | .500 | .187 | .031 | .203 | |
| | **433MA** | **220412-MA** | | ● | ● | .500 | .187 | .047 | .203 | |
|  Medium Cutting | | | | | | | | | | |
| **LM** | **VNMG331LM** | **VNMG160404-LM** | ● | ● | ● | .375 | .187 | .016 | .150 |  |
| | **332LM** | **160408-LM** | ● | ● | ● | .375 | .187 | .031 | .150 | |
|  Light Cutting | | | | | | | | | | |
| **MM** | **VNMG332MM** | **VNMG160408-MM** | ● | ● | ● | .375 | .187 | .031 | .150 |  |
|  Medium Cutting | | | | | | | | | | |

● : Inventory maintained.

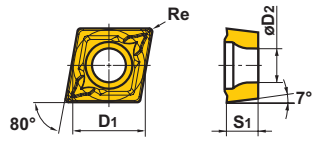
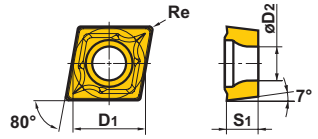
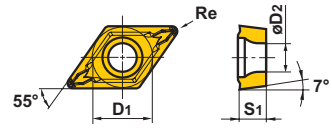
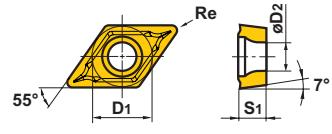
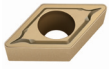
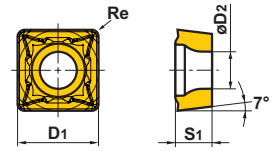
| Shape | Order Number | (ISO) Number | Stock | | | Dimensions (inch) | | | | Geometry |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | MC7015 | MC7025 | MP7035 | D1 | S1 | Re | D2 | |
| **GM** | **VNMG331GM** | **VNMG160404-GM** | ● | ● | ● | .375 | .187 | .016 | .150 |   |
| | **332GM** | **160408-GM** | ● | ● | ● | .375 | .187 | .031 | .150 | |
|  Medium Cutting | | | | | | | | | | |
| **MA** | **VNMG331MA** | **VNMG160404-MA** | | ● | ● | .375 | .187 | .016 | .150 |   |
| | **332MA** | **160408-MA** | | ● | ● | .375 | .187 | .031 | .150 | |
|  Medium Cutting | | | | | | | | | | |
| **LM** | **WNMG331LM** | **WNMG060404-LM** | ● | ● | ● | .375 | .187 | .016 | .150 |   |
| | **332LM** | **060408-LM** | ● | ● | ● | .375 | .187 | .031 | .150 | |
| | **431LM** | **080404-LM** | ● | ● | ● | .500 | .187 | .016 | .203 | |
| | **432LM** | **080408-LM** | ● | ● | ● | .500 | .187 | .031 | .203 | |
|  Light Cutting | | | | | | | | | | |
| **MM** | **WNMG332MM** | **WNMG060408-MM** | ● | ● | ● | .375 | .187 | .031 | .150 |   |
| | **333MM** | **060412-MM** | ● | ● | ● | .375 | .187 | .047 | .150 | |
| | **432MM** | **080408-MM** | ● | ● | ● | .500 | .187 | .031 | .203 | |
| | **433MM** | **080412-MM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
|  Medium Cutting | | | | | | | | | | |
| **RM** | **WNMG332RM** | **WNMG060408-RM** | ● | ● | ● | .375 | .187 | .031 | .150 |   |
| | **333RM** | **060412-RM** | ● | ● | ● | .375 | .187 | .047 | .150 | |
| | **432RM** | **080408-RM** | ● | ● | ● | .500 | .187 | .031 | .203 | |
| | **433RM** | **080412-RM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
|  Rough Cutting | | | | | | | | | | |
| **GM** | **WNMG331GM** | **WNMG060404-GM** | ● | ● | ● | .375 | .187 | .016 | .150 |   |
| | **332GM** | **060408-GM** | ● | ● | ● | .375 | .187 | .031 | .150 | |
| | **431GM** | **080404-GM** | ● | ● | ● | .500 | .187 | .016 | .203 | |
| | **432GM** | **080408-GM** | ● | ● | ● | .500 | .187 | .031 | .203 | |
| | **433GM** | **080412-GM** | ● | ● | ● | .500 | .187 | .047 | .203 | |
|  Medium Cutting | | | | | | | | | | |
| **MA** | **WNMG332MA** | **WNMG060408-MA** | | ● | ● | .375 | .187 | .031 | .150 |   |
| | **333MA** | **060412-MA** | | ● | ● | .375 | .187 | .047 | .150 | |
| | **431MA** | **080404-MA** | | ● | ● | .500 | .187 | .016 | .203 | |
| | **432MA** | **080408-MA** | | ● | ● | .500 | .187 | .031 | .203 | |
| | **433MA** | **080412-MA** | | ● | ● | .500 | .187 | .047 | .203 | |
|  Medium Cutting | | | | | | | | | | |

## INSERTS

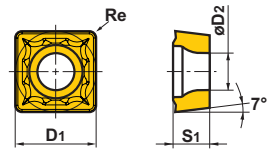
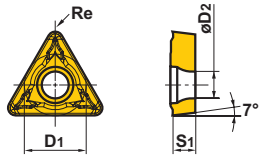
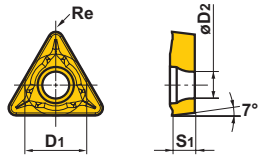
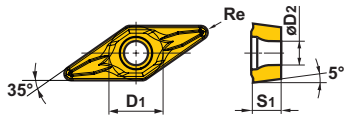
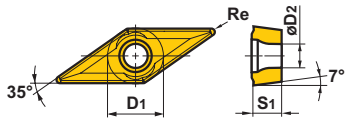
### ●5° Positive inserts (With hole)

| Shape | Order Number | (ISO) Number | Stock MC7015 | Stock MC7025 | Stock MP7035 | D1 | S1 | Re | D2 | Geometry |
|---|---|---|---|---|---|---|---|---|---|---|
| NEW LM | VBMT221LM | VBMT110304-LM | | ● | ● | .250 | .125 | .016 | .114 |  |
| | 222LM | 110308-LM | | ● | ● | .250 | .125 | .031 | .114 | |
|  | 331LM | 160404-LM | | ● | ● | .375 | .187 | .016 | .173 | |
| | 332LM | 160408-LM | | ● | ● | .375 | .187 | .031 | .173 | |
| Light Cutting | | | | | | | | | | |
| NEW MM | VBMT331MM | VBMT160404-MM | | ● | ● | .375 | .187 | .016 | .173 |  |
| | 332MM | 160408-MM | | ● | ● | .375 | .187 | .031 | .173 | |
|  | | | | | | | | | | |
| Medium Cutting | | | | | | | | | | |

### ●7° Positive inserts (With hole)

| Shape | Order Number | (ISO) Number | Stock MC7015 | Stock MC7025 | Stock MP7035 | D1 | S1 | Re | D2 | Geometry |
|---|---|---|---|---|---|---|---|---|---|---|
| NEW LM | CCMT21.51LM | CCMT060204-LM | | ● | ● | .250 | .094 | .016 | .110 |  |
| | 21.52LM | 060208-LM | | ● | ● | .250 | .094 | .031 | .110 | |
| | 32.51LM | 09T304-LM | | ● | ● | .375 | .156 | .016 | .173 | |
|  | 32.52LM | 09T308-LM | | ● | ● | .375 | .156 | .031 | .173 | |
| Light Cutting | | | | | | | | | | |
| NEW MM | CCMT21.51MM | CCMT060204-MM | | ● | ● | .250 | .094 | .016 | .110 |  |
| | 21.52MM | 060208-MM | | ● | ● | .250 | .094 | .031 | .110 | |
| | 32.51MM | 09T304-MM | | ● | ● | .375 | .156 | .016 | .173 | |
|  | 32.52MM | 09T308-MM | | ● | ● | .375 | .156 | .031 | .173 | |
| | 431MM | 120404-MM | | ● | ● | .500 | .187 | .016 | .217 | |
| | 432MM | 120408-MM | | ● | ● | .500 | .187 | .031 | .217 | |
| Medium Cutting | 433MM | 120412-MM | | ● | ● | .500 | .187 | .047 | .217 | |
| NEW LM | DCMT21.51LM | DCMT070204-LM | | ● | ● | .250 | .094 | .016 | .110 |  |
| | 21.52LM | 070208-LM | | ● | ● | .250 | .094 | .031 | .110 | |
| | 32.51LM | 11T304-LM | | ● | ● | .375 | .156 | .016 | .173 | |
|  | 32.52LM | 11T308-LM | | ● | ● | .375 | .156 | .031 | .173 | |
| Light Cutting | | | | | | | | | | |
| NEW MM | DCMT21.51MM | DCMT070204-MM | | ● | ● | .250 | .094 | .016 | .110 |  |
| | 21.52MM | 070208-MM | | ● | ● | .250 | .094 | .031 | .110 | |
| | 32.51MM | 11T304-MM | | ● | ● | .375 | .156 | .016 | .173 | |
|  | 32.52MM | 11T308-MM | | ● | ● | .375 | .156 | .031 | .173 | |
| | 431MM | 150404-MM | | ● | ● | .500 | .187 | .016 | .217 | |
| Medium Cutting | 432MM | 150408-MM | | ● | ● | .500 | .187 | .031 | .217 | |
| NEW LM | SCMT32.51LM | SCMT09T304-LM | | ● | ● | .375 | .156 | .016 | .173 |  |
| | 32.52LM | SCMT09T308-LM | | ● | ● | .375 | .156 | .031 | .173 | |
|  | | | | | | | | | | |
| Light Cutting | | | | | | | | | | |

● : Inventory maintained.

| Shape | Order Number | (ISO) Number | Stock | | | Dimensions (inch) | | | | Geometry |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | MC7015 | MC7025 | MP7035 | D1 | S1 | Re | D2 | |
| NEW MM | SCMT32.51MM | SCMT09T304-MM | | ● | ● | .375 | .156 | .016 | .173 |  |
| | 32.52MM | 09T308-MM | | ● | ● | .375 | .156 | .031 | .173 | |
| | 431MM | 120404-MM | | ● | ● | .500 | .187 | .016 | .217 | |
| | 432MM | 120408-MM | | ● | ● | .500 | .187 | .031 | .217 | |
|  Medium Cutting | | | | | | | | | | |
| NEW LM | TCMT1.81.51LM | TCMT090204-LM | | ● | ● | .219 | .094 | .016 | .098 |  |
| | 1.81.52LM | 090208-LM | | ● | ● | .219 | .094 | .031 | .098 | |
| | 21.51LM | 110204-LM | | ● | ● | .250 | .094 | .016 | .110 | |
| | 21.52LM | 110208-LM | | ● | ● | .250 | .094 | .031 | .110 | |
| | 32.51LM | 16T304-LM | | ● | ● | .375 | .156 | .016 | .173 | |
|  Light Cutting | 32.52LM | 16T308-LM | | ● | ● | .375 | .156 | .031 | .173 | |
| NEW MM | TCMT1.81.51MM | TCMT090204-MM | | ● | ● | .219 | .094 | .016 | .098 |  |
| | 1.81.52MM | 090208-MM | | ● | ● | .219 | .094 | .031 | .098 | |
| | 21.51MM | 110204-MM | | ● | ● | .250 | .094 | .016 | .110 | |
| | 21.52MM | 110208-MM | | ● | ● | .250 | .094 | .031 | .110 | |
| | 2.521MM | 130304-MM | | ● | ● | .313 | .125 | .016 | .134 | |
| | 32.51MM | 16T304-MM | | ● | ● | .375 | .156 | .016 | .173 | |
| | 32.52MM | 16T308-MM | | ● | ● | .375 | .156 | .031 | .173 | |
|  Medium Cutting | 32.53MM | 16T312-MM | | ● | ● | .375 | .156 | .047 | .173 | |
| NEW LM | VCMT221LM | VCMT110304-LM | | ● | ● | .250 | .125 | .016 | .110 |  |
| | 222LM | 110308-LM | | ● | ● | .250 | .125 | .031 | .110 | |
| | 331LM | 160404-LM | | ● | ● | .375 | .187 | .016 | .173 | |
| | 332LM | 160408-LM | | ● | ● | .375 | .187 | .031 | .173 | |
|  Light Cutting | | | | | | | | | | |
| NEW MM | VCMT331MM | VCMT160404-MM | | ● | ● | .375 | .187 | .016 | .173 |  |
| | 332MM | 160408-MM | | ● | ● | .375 | .187 | .031 | .173 | |
| | 333MM | 160412-MM | | ● | ● | .375 | .187 | .047 | .173 | |
|  Medium Cutting | | | | | | | | | | |

## RECOMMENDED CUTTING CONDITIONS

### Negative Inserts (External turning tools)

| | Work Material | Hardness | Cutting Conditions | Cutting Range | Breaker | Grade | Cutting Speed (SFM) | Feed Rate (IPR) | Depth of Cut (inch) |
|---|---|---|---|---|---|---|---|---|---|
| M | Austenitic Stainless Steel (AISI 304, 316, etc.) | ≤200HB | Stable Cutting | Light Cutting | LM | MC7015 | 590—935 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | MM | MC7015 | 525—835 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | RM | MC7015 | 510—800 | .010—.022 | .060—.236 |
| | | | General Cutting | Light Cutting | LM | MC7025 | 525—705 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | MM | MC7025 | 475—640 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | RM | MC7025 | 460—605 | .010—.022 | .060—.236 |
| | | | Unstable Cutting | Light Cutting | LM | MP7035 | 310—510 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | MM | MP7035 | 280—460 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | RM | MP7035 | 280—440 | .010—.022 | .060—.236 |
| | Austenitic Stainless Steel (AISI 304LN, 316LN, etc.) | >200HB | Stable Cutting | Light Cutting | LM | MC7015 | 490—790 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | MM | MC7015 | 440—705 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | RM | MC7015 | 425—670 | .010—.022 | .060—.236 |
| | | | General Cutting | Light Cutting | LM | MC7025 | 440—590 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | MM | MC7025 | 410—540 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | RM | MC7025 | 375—510 | .010—.022 | .060—.236 |
| | | | Unstable Cutting | Light Cutting | LM | MP7035 | 260—425 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | MM | MP7035 | 245—390 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | RM | MP7035 | 230—375 | .010—.022 | .06—.236 |
| | Duplex Stainless Steel (ASTM 32900, etc.) | ≤280HB | Stable Cutting | Light Cutting | LM | MC7015 | 400—640 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | MM | MC7015 | 360—575 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | RM | MC7015 | 345—540 | .010—.022 | .060—.236 |
| | | | General Cutting | Light Cutting | LM | MC7025 | 360—490 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | MM | MC7025 | 330—440 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | RM | MC7025 | 310—410 | .010—.022 | .060—.236 |
| | | | Unstable Cutting | Light Cutting | LM | MP7035 | 215—345 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | MM | MP7035 | 195—310 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | RM | MP7035 | 180—295 | .010—.022 | .060—.236 |
| | Ferritic and Martensitic Stainless Steels (AISI 410, 430, etc.) | ≤200HB | Stable Cutting | Light Cutting | LM | MC7015 | 590—935 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | MM | MC7015 | 525—835 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | RM | MC7015 | 510—800 | .010—.022 | .060—.236 |
| | | | General Cutting | Light Cutting | LM | MC7025 | 525—705 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | MM | MC7025 | 475—640 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | RM | MC7025 | 460—605 | .010—.024 | .060—.236 |
| | | | Unstable Cutting | Light Cutting | LM | MP7035 | 310—510 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | MM | MP7035 | 280—460 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | RM | MP7035 | 280—440 | .010—.022 | .060—.236 |

| | Work Material | Hardness | Cutting Conditions | Cutting Range | Breaker | Grade | Cutting Speed (SFM) | Feed Rate (IPR) | Depth of Cut (inch) |
|---|---|---|---|---|---|---|---|---|---|
| M | Ferritic and Martensitic Stainless Steels (AISI 431) | >200HB | Stable Cutting | Light Cutting | **LM** | **MC7015** | 490—790 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | **MM** | **MC7015** | 440—705 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | **RM** | **MC7015** | 425—670 | .010—.022 | .060—.236 |
| | | | General Cutting | Light Cutting | **LM** | **MC7025** | 440—590 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | **MM** | **MC7025** | 410—540 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | **RM** | **MC7025** | 375—510 | .010—.024 | .060—.236 |
| | | | Unstable Cutting | Light Cutting | **LM** | **MP7035** | 260—425 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | **MM** | **MP7035** | 245—390 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | **RM** | **MP7035** | 230—375 | .010—.022 | .060—.236 |
| | Hardened Stainless Steels (17-4PH, 17-7 PH, etc.) | <450HB | Stable Cutting | Light Cutting | **LM** | **MC7015** | 330—525 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | **MM** | **MC7015** | 295—475 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | **RM** | **MC7015** | 280—440 | .010—.022 | .060—.236 |
| | | | General Cutting | Light Cutting | **LM** | **MC7025** | 295—390 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | **MM** | **MC7025** | 260—360 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | **RM** | **MC7025** | 260—345 | .010—.024 | .060—.236 |
| | | | Unstable Cutting | Light Cutting | **LM** | **MP7035** | 180—280 | .004—.012 | .012—.080 |
| | | | | Medium Cutting | **MM** | **MP7035** | 165—260 | .006—.018 | .028—.197 |
| | | | | Rough Cutting | **RM** | **MP7035** | 145—245 | .010—.022 | .060—.236 |

*Please use with reference to the recommended conditions of the boring bar in internal machining.

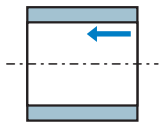
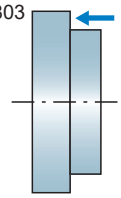
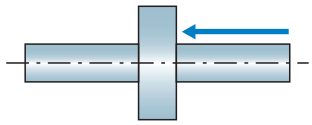
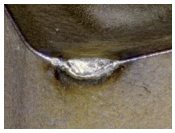
## RECOMMENDED CUTTING CONDITIONS

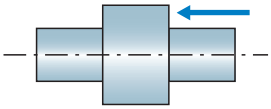
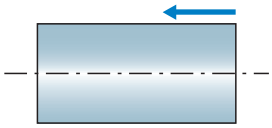
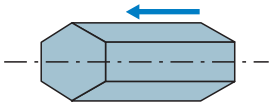
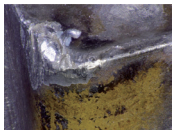
### 7° Positive Insert (External turning tools)

| | Work Material | Hardness | Cutting Conditions | Cutting Range | Breaker | Grade | Cutting Speed (SFM) | Feed Rate (IPR) | Depth of Cut (inch) |
|---|---|---|---|---|---|---|---|---|---|
| M | Austenitic Stainless Steel (AISI 304, 316, etc.) | ≤200HB | Stable Cutting | Light Cutting | LM | MC7025 | 460—620 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MC7025 | 375—510 | .003—.012 | .012—.079 |
| | | | General Cutting | Light Cutting | LM | MC7025 | 460—620 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MC7025 | 375—510 | .003—.012 | .012—.079 |
| | | | Unstable Cutting | Light Cutting | LM | MP7035 | 280—440 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MP7035 | 230—375 | .003—.012 | .012—.079 |
| | Austenitic Stainless Steel (AISI 304LN, 316LN, etc.) | >200HB | Stable Cutting | Light Cutting | LM | MC7025 | 395—525 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MC7025 | 330—425 | .003—.012 | .012—.079 |
| | | | General Cutting | Light Cutting | LM | MC7025 | 395—525 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MC7025 | 330—425 | .003—.012 | .012—.079 |
| | | | Unstable Cutting | Light Cutting | LM | MP7035 | 230—375 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MP7035 | 195—310 | .003—.012 | .012—.079 |
| | Duplex Stainless Steel (ASTM 32900, etc.) | ≤280HB | Stable Cutting | Light Cutting | LM | MC7025 | 310—425 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MC7025 | 260—345 | .003—.012 | .012—.079 |
| | | | General Cutting | Light Cutting | LM | MC7025 | 310—425 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MC7025 | 260—345 | .003—.012 | .012—.079 |
| | | | Unstable Cutting | Light Cutting | LM | MP7035 | 180—310 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MP7035 | 150—245 | .003—.012 | .012—.079 |
| | Ferritic and Martensitic Stainless Steels (AISI 410, 430, etc.) | ≤200HB | Stable Cutting | Light Cutting | LM | MC7025 | 460—620 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MC7025 | 375—510 | .003—.012 | .012—.079 |
| | | | General Cutting | Light Cutting | LM | MC7025 | 460—620 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MC7025 | 375—510 | .003—.012 | .012—.079 |
| | | | Unstable Cutting | Light Cutting | LM | MP7035 | 280—440 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MP7035 | 230—375 | .003—.012 | .012—.079 |
| | Ferritic and Martensitic Stainless Steels (AISI 431) | >200HB | Stable Cutting | Light Cutting | LM | MC7025 | 395—525 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MC7025 | 330—425 | .003—.012 | .012—.079 |
| | | | General Cutting | Light Cutting | LM | MC7025 | 395—525 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MC7025 | 330—425 | .003—.012 | .012—.079 |
| | | | Unstable Cutting | Light Cutting | LM | MP7035 | 230—375 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MP7035 | 195—310 | .003—.012 | .012—.079 |
| | Hardened Stainless Steel (17-4PH, 17-7 PH, etc.) | <450HB | Stable Cutting | Light Cutting | LM | MC7025 | 260—345 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MC7025 | 210—295 | .003—.012 | .012—.079 |
| | | | General Cutting | Light Cutting | LM | MC7025 | 260—345 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MC7025 | 210—295 | .003—.012 | .012—.079 |
| | | | Unstable Cutting | Light Cutting | LM | MP7035 | 150—245 | .002—.010 | .008—.039 |
| | | | | Medium Cutting | MM | MP7035 | 130—210 | .003—.012 | .012—.079 |

*Recommended cutting conditions for 7° 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.

## EXAMPLES OF USAGE

| Insert | WNMG432MM | CNMG543RM | CNMG432MM |
|---|---|---|---|
| Work Piece | AISI 304  | ASTM S 31803  | AISI 321  |
| Cutting Conditions: Cutting Speed (SFM) | 475 | 165 | 720 |
| Cutting Conditions: Feed Rate (IPR) | .005 | .018 | .011 |
| Cutting Conditions: Depth of Cut (inch) | .079 | .157 | .063 |
| Coolant | Wet | Wet | Wet |
| Results | Conventional  5 pieces machined<br>MC7025  10 pieces machined | Conventional  8 pieces machined<br>MC7025  8 pieces machined | Conventional Fracture 4 pieces machined<br>MC7015  8 pieces machined |

| Insert | CNMG432LM | WNMG432MM | CNMG432LM |
|---|---|---|---|
| Work Piece | ASTM N 08367  | AISI 316  | AISI 304  |
| Cutting Conditions: Cutting Speed (SFM) | 230 | 400 | 260 |
| Cutting Conditions: Feed Rate (IPR) | .008 | .012 | .004 |
| Cutting Conditions: Depth of Cut (inch) | .043 | .087 | .079 |
| Coolant | Wet | Wet | Wet |
| Results | Conventional  12 pieces machined<br>MC7025  15 pieces machined | Conventional  60 pieces machined<br>MC7015  60 pieces machined | Conventional  5 pieces machined<br>MP7035  5 pieces machined |

**For your safety**
●Don't touch breakers and chips without gloves. ●Please machine within recommended application range, and exchange expired tools with new parts in advance. ●Please use safety cover and wear safety glasses. ●When using compounded cutting oils, please take fire prevention. ●When attaching chips or spare parts, please use the attached wrench or driver. ●When using tools in revolution machining, please make a trial run to check run-out, vibration, abnormal sounds etc.

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