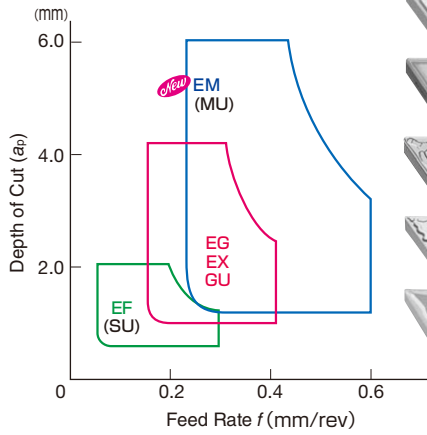
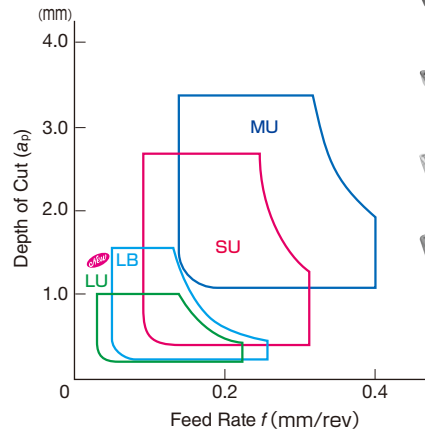


Chipbreakers

Negative Type

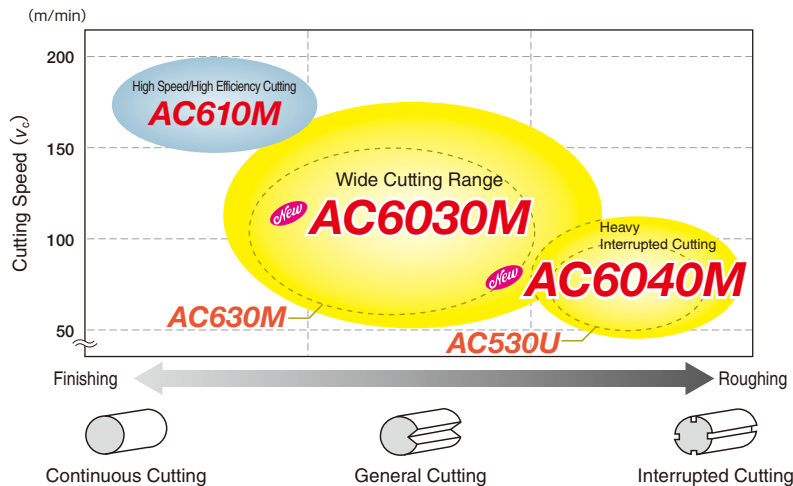


Positive Type



Refer to the chapter on Small Tools (page D7) for the Chipbreaker Selection Guide for ground inserts (G Class) inserts.

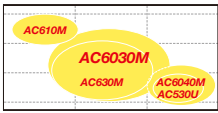
Grades



Recommended Cutting Conditions

(Red text indicates 1st recommendation.)

Work Material			Cutting Process	Chipbreaker	Grade	Cutting Conditions		
						Depth of Cu a_p (mm)	Feed Rate f (mm/rev)	Cutting Speed V_c (m/min)
Cr-based	Ferritic	SUS405, SUS410L, SUS430, SUS430F, SUS434, SUS447FJ1	Finishing	EF (SU)	AC610M	0.5-1.5-2.0	0.05-0.15-0.25	170-225-300
		Medium	EG · GU · EX	AC6030M	1.0-2.5-4.0	0.10-0.25-0.40	140-180-235	
		Rough	EM (MU)	AC6040M	1.5-3.5-6.0	0.20-0.35-0.60	120-150-180	
	Martensitic	SUS403, SUS410, SUS420J2, SUS420F, SUS440F	Finishing	EF (SU)	AC6030M	0.5-1.5-2.0	0.05-0.15-0.25	120-175-230
		Medium	EG · GU · EX	AC6030M	1.0-2.5-4.0	0.10-0.25-0.40	100-140-180	
		Rough	EM (MU)	AC6040M	1.5-3.5-6.0	0.20-0.35-0.60	80-120-160	
Cr/Ni-based	Austenitic	SSU304, SUS304L, SUS316, SUS316L, SUS303, SUS321	Finishing	EF (SU)	AC6030M	0.5-1.5-2.0	0.05-0.15-0.25	145-200-265
		Medium	EG · GU · EX	AC6030M	1.0-2.5-4.0	0.10-0.25-0.40	120-160-210	
		Rough	EM (MU)	AC6040M	1.5-3.5-6.0	0.20-0.35-0.60	100-135-170	
	Two-Phase Austenitic/Ferritic	SUS329J1, SUS329J3L, SSU329J4L	Finishing	EF (SU)	AC6030M	0.5-1.5-2.0	0.05-0.15-0.25	120-160-200
		Medium	EG · GU · EX	AC6030M	1.0-2.5-4.0	0.10-0.25-0.40	95-125-160	
		Rough	EM (MU)	AC6040M	1.5-3.5-6.0	0.20-0.35-0.60	75-105-135	
	Deposition Hardened Structures	SUS630, SUS631, SUS632J1	Finishing	EF (SU)	AC6030M	0.5-1.5-2.0	0.05-0.15-0.25	90-115-140
		Medium	EG · GU · EX	AC6030M	1.0-2.5-4.0	0.10-0.25-0.40	70- 90-110	
		Rough	EM (MU)	AC6040M	1.5-3.5-6.0	0.20-0.35-0.60	50- 75-100	



Grades

New AC6030M / **New** AC6040M / AC610M / AC630M / AC520U / AC530U

AC6030M : Employs Absotech Platinum, a new CVD coating. The first recommended grade for general machining of stainless steel that drastically reduces the occurrence of abnormal damage, which is a problem in stainless steel machining, and achieves long and stable machining thanks to the improved coating strength and excellent adhesion.

AC6040M : Employs Absotech Bronze, a new PVD coating, and exclusive tough carbide substrate. The first recommended grade for interrupted machining of stainless steel that drastically improves the reliability in unstable machining thanks to the excellent adhesion and peel-off resistance of the new PVD coating as well as the improved fracture resistance of the exclusive carbide substrate.

AC610M : High hardness carbide substrate coupled with Super FF Coat. For high efficiency machining with superior wear resistance.

AC630M : High toughness carbide substrate coupled with Super FF Coat. A general purpose grade with sharp cutting edges for superior stability.

AC520U : Tough carbide grade that utilises the high wear resistant Super ZX Coat for excellent stability

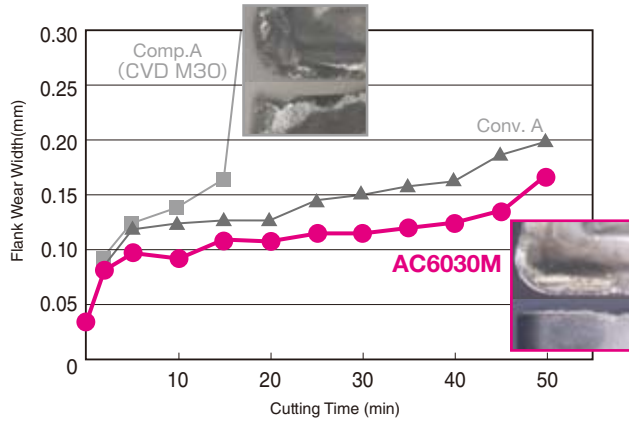
AC530U : Tough grade with long tool life and high efficiency for precision machining of stainless steel and small components.

From page D6

Performance

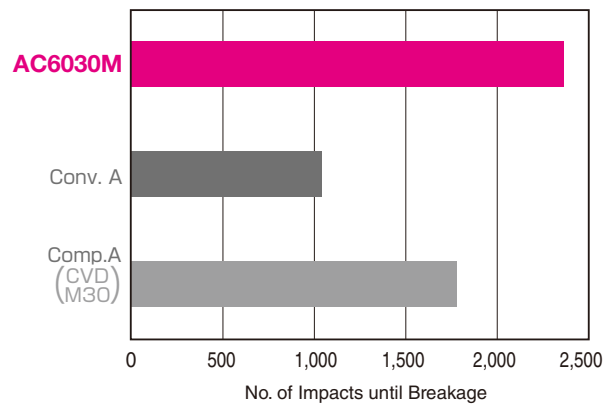
New AC6030M Cutting Performance

● Continuous Cutting



Work Material : SUS316 Insert : CNMG120408N-EX
Cutting Conditions : $v_c=200\text{m/min}$ $f=0.2\text{mm/rev}$ $a_p=2.0\text{mm}$ Wet

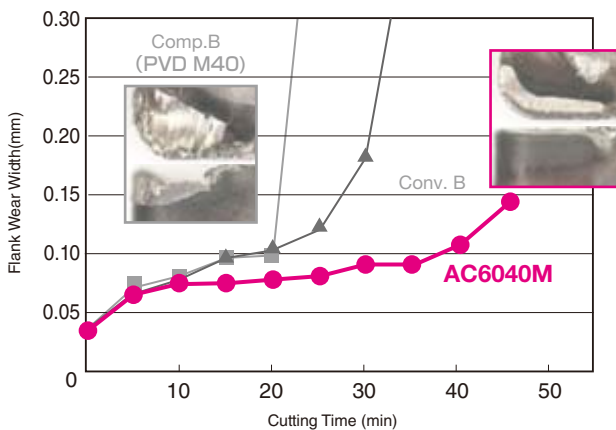
● Interrupted Cutting



Work Material : SUS316 Insert : CNMG120408N-GU
Cutting Conditions : $v_c=100\text{m/min}$ $f=0.1\text{mm/rev}$ $a_p=1.0\text{mm}$ Wet

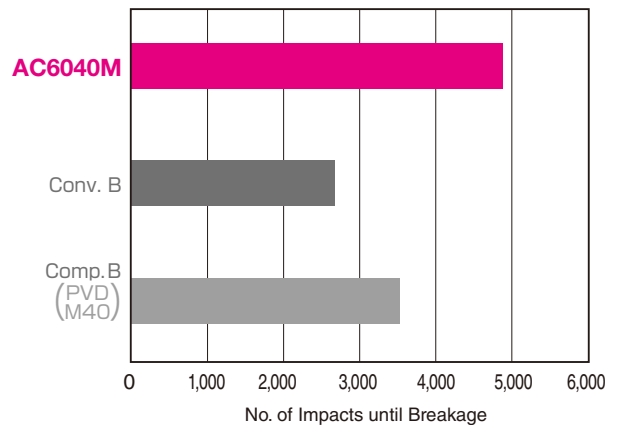
New AC6040M Cutting Performance

● Continuous Cutting

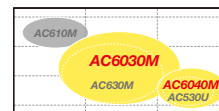


Work Material : SUS316 Insert : CNMG120408N-GU
Cutting Conditions : $v_c=150\text{m/min}$ $f=0.2\text{mm/rev}$ $a_p=2.0\text{mm}$ Wet

● Interrupted Cutting



Work Material : SUS316 Insert : CNMG120408N-GU
Cutting Conditions : $v_c=230\text{m/min}$ $f=0.23\text{mm/rev}$ $a_p=0.80\text{mm}$ Dry

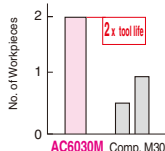
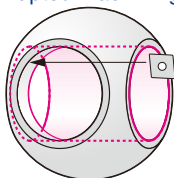


Application Examples

New AC6030M

[SCS13 Valve Ball]

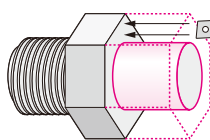
Achieves stable, 2 times longer tool life in interrupted machining of cast steel.



Insert : CNMG120412N-EM (AC6030M)
Cutting Conditions : $v_c=100\text{m/min}$ $f=0.30$ to 0.35mm/rev
 $a_p=2.5\text{mm}$ Wet

[SUS304 Joint Component]

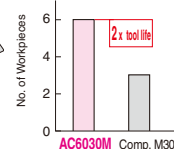
Enables roughing to finishing from hexagonal bars with one grade and achieves 3 times longer tool life.



Insert : CNMG120412N-GU (AC6030M)
Cutting Conditions : $v_c=50$ to 75m/min $f=0.16\text{mm/rev}$
 $a_p=2.0\text{mm}$ Wet

[SUS304 Shaft]

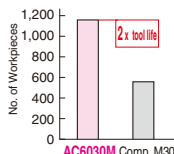
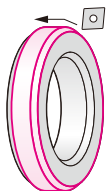
Achieves 2 times longer tool life thanks to excellent wear resistance.



Insert : WNMG080408N-EX (AC6030M)
Cutting Conditions : $v_c=60$ to 70m/min $f=0.32\text{mm/rev}$
 $a_p=3.0\text{mm}$ Wet

[SUS430 Motorcycle Component]

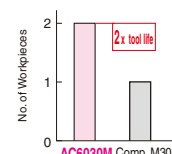
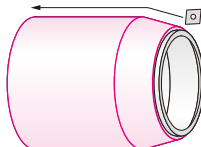
Provides stable machined surface quality and achieves 2 times longer tool life thanks to excellent adhesion resistance.



Insert : CNMG120404N-EF (AC6030M)
Cutting Conditions : $v_c=120\text{m/min}$ $f=0.10\text{mm/rev}$
 $a_p=0.8$ to 1.5mm Wet

[SCS11 Pump Part]

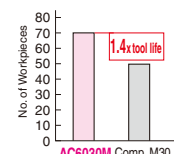
Provides 2.5 times efficiency ($V_c=60$ to 100m/min , $f=0.2$ to 0.3mm/rev) and 2 times longer tool life.



Insert : CNMG120408N-EG (AC6030M)
Cutting Conditions : $v_c=100\text{m/min}$ $f=0.3\text{mm/rev}$
 $a_p=0.5\text{mm}$ Wet

[SUS304 Shaft]

Achieves 1.4 times longer tool life thanks to excellent wear resistance.

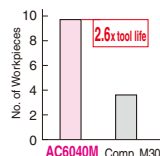
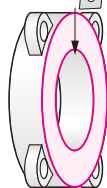


Insert : CNMG120408N-GU (AC6030M)
Cutting Conditions : $v_c=160\text{m/min}$ $f=0.25\text{mm/rev}$
 $a_p=3.0\text{mm}$ Wet

New AC6040M

[SCS14 Flange]

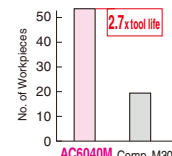
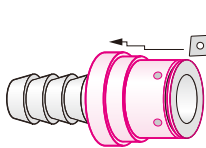
Achieves 2.6 times longer tool life thanks to excellent fracture resistance.



Insert : CNMG120408N-GU (AC6040M)
Cutting Conditions : $v_c=200$ to 360m/min $f=0.12\text{mm/rev}$
 $a_p=0.4\text{mm}$ Wet

[SUS304 Nozzle]

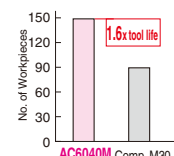
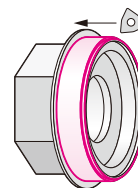
Achieves 2.7 times longer tool life thanks to excellent adhesion resistance.



Insert : CNMG120408N-GU (AC6040M)
Cutting Conditions : $v_c=150\text{m/min}$ $f=0.15\text{mm/rev}$
 $a_p=1.5\text{mm}$ Wet

[SCS14 Valve Joint]

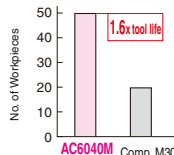
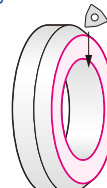
Achieves 1.6 times longer tool life thanks to excellent crater wear resistance.



Insert : WNMG080408N-EX (AC6040M)
Cutting Conditions : $v_c=130$ to 160m/min $f=0.10\text{mm/rev}$
 $a_p=0.7\text{mm}$ Wet

[SCS13 Flange Joint Component]

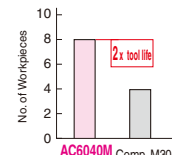
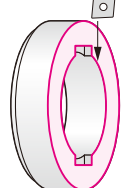
Provides stable machined surfaces and achieves 1.6 times longer tool life thanks to excellent wear resistance.



Insert : WNMG080408N-EX (AC6040M)
Cutting Conditions : $v_c=140$ to 200m/min $f=0.08\text{mm/rev}$
 $a_p=0.5\text{mm}$ Wet

[SCS13 Coupling]

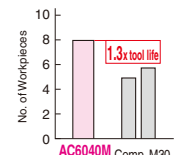
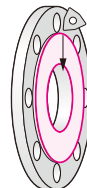
Achieves 2 times longer tool life thanks to excellent fracture resistance.



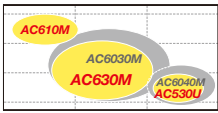
Insert : CNMG120408N-EG (AC6040M)
Cutting Conditions : $v_c=70$ to 180m/min $f=0.14\text{mm/rev}$
 $a_p=2.5\text{mm}$ Wet

[SUS14 Valve Flange]

Achieves over 1.3 times longer stable tool life thanks to excellent fracture resistance.



Insert : WNMG080408N-GU (AC6040M)
Cutting Conditions : $v_c=180$ to 340m/min $f=0.15\text{mm/rev}$
 $a_p=0.4\text{mm} \times 4\text{pass}$ Wet

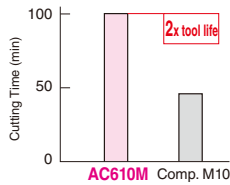
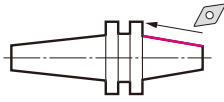


Application Examples

AC610M

SUS304 Arbor

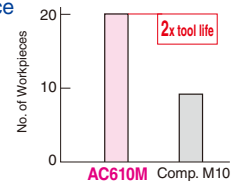
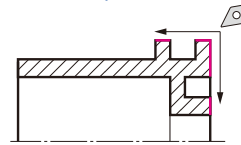
AC610M has good wear resistance with 2x tool life of competitor's.



Insert : DNMG150408N-EX (AC610M)
Cutting Conditions : $v_c=210\text{m/min}$ $f=0.3\text{mm/rev}$ $a_p=2.0\text{mm}$ Wet

SUS410 Sleeve

AC610M features superior wear resistance compared to competitor's with 2x tool life.

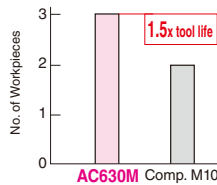
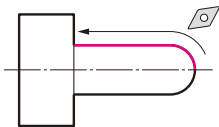


Insert : DNMG150408N-GU (AC610M)
Cutting Conditions : $v_c=215\text{m/min}$ $f=0.35\text{mm/rev}$ $a_p=0.85\text{mm}$ Wet

AC630M

SUS304 Machine Component

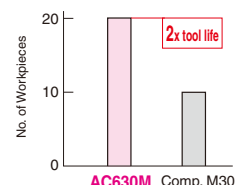
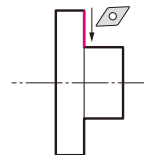
AC630M enables stable cutting without breakages with 1.5x the tool life of competitor's grade.



Insert : DNMG150408N-EX (AC630M)
Cutting Conditions : $v_c=130\text{m/min}$ $f=0.4\text{mm/rev}$ $a_p=0.5\text{mm}$ Wet

SUS316L Automotive Component

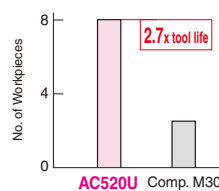
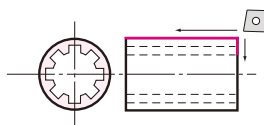
AC630M enables stable cutting even in light interrupted cutting with 2x the tool life of competitor's grade.



Insert : DNMG150408N-GU (AC630M)
Cutting Conditions : $v_c=150\text{m/min}$ $f=0.15\text{mm/rev}$ $a_p=1.6\text{mm}$ Wet

AC520U

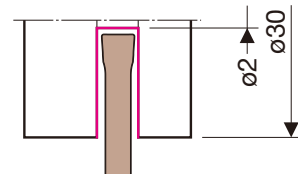
SUS304 Machine Component



Insert : CNMG120408N-EX (AC520U)
Cutting Conditions : $v_c=150\text{m/min}$ $f=0.2\text{mm/rev}$ $a_p=2.0\text{mm}$ Wet

Grooving SUS304 Measuring Component

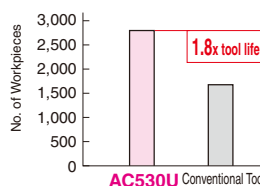
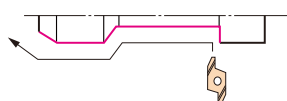
Enables stable machining without chattering thanks to excellent chip control performance and a high rigidity holder.



Insert : GCM N3002-GG (AC520U) Toolholder : GNDL R2525M-320
Cutting Conditions : $v_c=60\text{m/min}$ $f=0.025\text{mm/rev}$ $a_p=2.0\text{mm}$ Wet Cutting edge : 3mm

AC530U

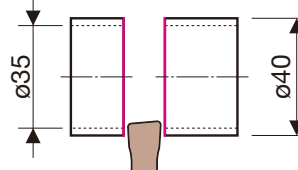
SUS416 Pulley Shaft



Insert : BTR3515 (AC530U)
Cutting Conditions : $v_c=60\text{ to }90\text{m/min}$ $f=0.04\text{mm/rev}$ $a_p=1.5\text{ to }2.5\text{mm}$ Wet

Cutting Off Round Hollow SUS303 Pipe

Enables stable machining thanks to superior cutting performance and excellent chip control.



Insert : GCMR2002-CG-05 (AC530U) Toolholder : GNDL R2020K-220
Cutting Conditions : $v_c=140\text{m/min}$ ($n=1,000\text{rpm}$) $f=0.03\text{mm/rev}$ Wet Cutting edge : 2mm