SUMITOMO
CARBIDE - CBN - DIAMOND

Coated Grades for Stainless Steel

AC6020M/AC6030M/New AC6135M/New AC6145M

Stainless steel turning grade series, achieving "ABSOLUTELY STABLE CUTTING"

New
Light Interrupted Turning / Casted and Forged skin / Heavy Interrupted Turning

Introducing AC6135M/AC6145M

New
Negative M Class Chipbreaker

NEH type Lineup

for Medium Cutting to Roughing
Stocked Grades: AC6135M/AC6145M

P M K N S H

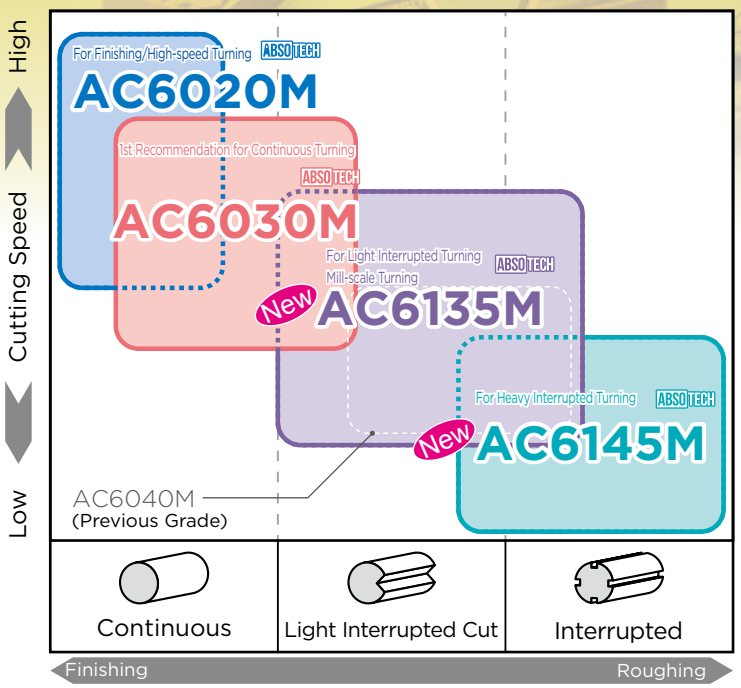
SUMITOMO ELECTRIC GROUP

Coated Grades For Stainless Steel

AC6020M/AC6030M/AC6135M/AC6145M

VIDEO OF CUTTING

■ Application Range



AC6020M CVD ABSOTECH

The combination of a CVD coating and a high-hardness carbide substrate realises long and stable tool life in **finishing and high-speed turning.**

AC6030M CVD ABSOTECH

1st recommended grade for continuous turning, using CVD coating to drastically reduce the occurrence of abnormal damage, a problem in stainless steel turning, to achieve a long and stable tool life.

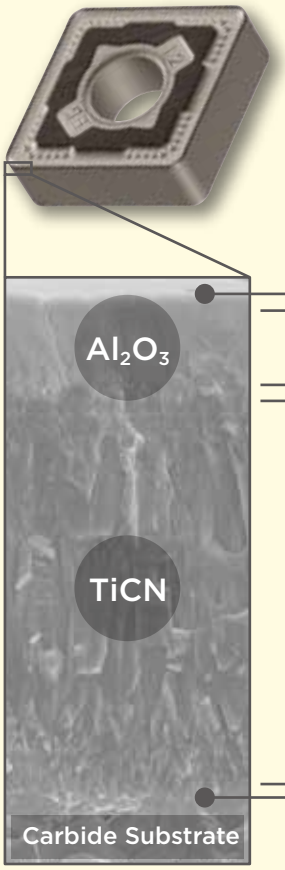
AC6135M New PVD ABSOTECH

Balances excellent wear resistance and fracture resistance in light Interrupted turning and casted or or forged skin turning through the use of new PVD coating.

AC6145M New PVD ABSOTECH

The combination of a PVD coating and a high-toughness carbide substrate realises absolute stability in **heavy interrupted turning.**

■ Features of AC6020M/AC6030M



AC6020M/AC6030M CVD ABSOTECH

Stainless steel turning grades with significantly improved chipping and adhesion resistance through the use of our proprietary insert surface smoothing treatment

Surface Smoothing Treatment

Surface smoothing treatment improves adhesion resistance, significantly suppressing adhesion and the resulting chipping

High Toughness Alumina Layer

Realises stable long tool life through the use of an alumina layer with excellent toughnessping

High Hardness Fine Grained TiCN Layer

Fine and uniform crystal structure significantly improves the coating hardness

High Adhesion Technology Layer

Significantly improves adhesion strength through a smooth interface between the coating and carbide substrate

■ Applications of AC6000M Series / AC6100M Series (Example: Stainless Steel)

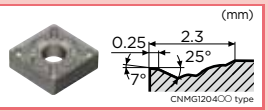
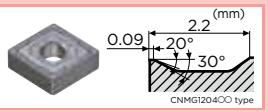
Applicable Work Materials (1st Recommendation)

Ferritic (X6CrAl13/ X6Cr17 etc.)
Martensitic (X12Cr13/X30Cr13/X105CrMo17 etc.)
Precipitation Hardened Structure (X5CrNiCuNb16-4/X7CrNiAl17-7/ X8CrNiMoAl15-7-2 etc.)

Applicable Work Materials (1st Recommendation)

Austenitic (X5CrNi18-10/X5CrNiMo17-12-2 /X6CrNiTi18-10 etc.)
Duplex (X2CrNiMoN29-7-2/X2CrNiMoN22-5-3 / X2CrNiMoCuN25-6-3 etc.)

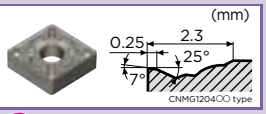
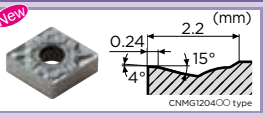
AC6030M — CVD

General-Purpose 1st Recommendation	NGU type	
General-Purpose Chip Control Emphasized	NEG type	

For Light Interrupted Turning and Forged or Casted Skin

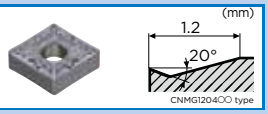
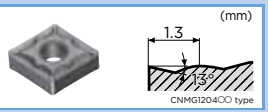
For Continuous Turning

AC6135M — New — PVD

General-Purpose 1st Recommendation	NGU type	
Stable Machining Emphazised	NEH New type	

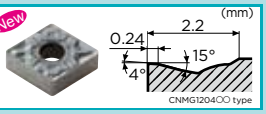
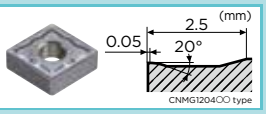
For Finishing/High-speed Turning

AC6020M — CVD

Chip Control Emphasized 1st Recommendation	NEF type	
Cutting Force Supressed	NSU type	

For Heavy Interrupted Turning

AC6145M — New — PVD

Chip Control Emphasized 1st Recommendation	NEH New type	
Rapid Fractures Suppressed	NEM type	

■ Features of AC6135M/AC6145M New

AC6135M/AC6145M PVD ABSOTECH

AlTiBN-based multi-layered coating provides excellent wear, fracture and adhesion resistance and exhibits absolute stability in the turning of stainless steels.

Adhesion Resistance Layer

The use of a TiCN-based composition with excellent lubricity suppresses adhesion and the resulting chipping

Wear Resistance Layer

The use of our proprietary high-hardness AlTiBN-based super multi-layered coating significantly suppresses crater wear and flank wear

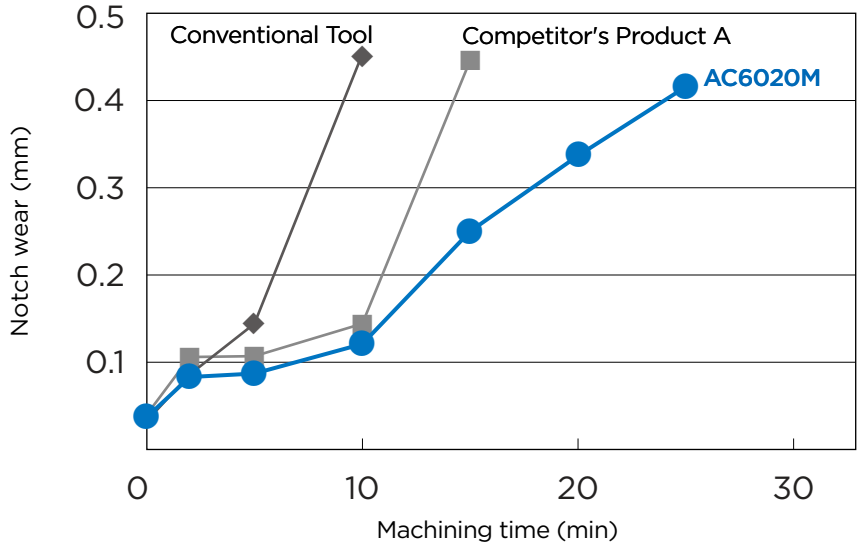
Chipping Resistance Layer

The use of an ultra-fine grain AlTiBN-based composition with excellent toughness suppresses unexpected chipping

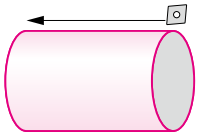
High Adhesion Technology

Improved stability with special technology enhancing coating adhesion strength

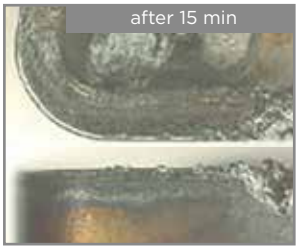
■ Wear Resistance of AC6020M (Continuous Turning of Stainless Steel)



Work Material:	X2CrNiMo17-12-2 Continuous Turning
Insert:	CNMG120408
Cutting Conditions:	Vc = 150m/min f = 0.3mm/rev ap = 2.0mm Wet

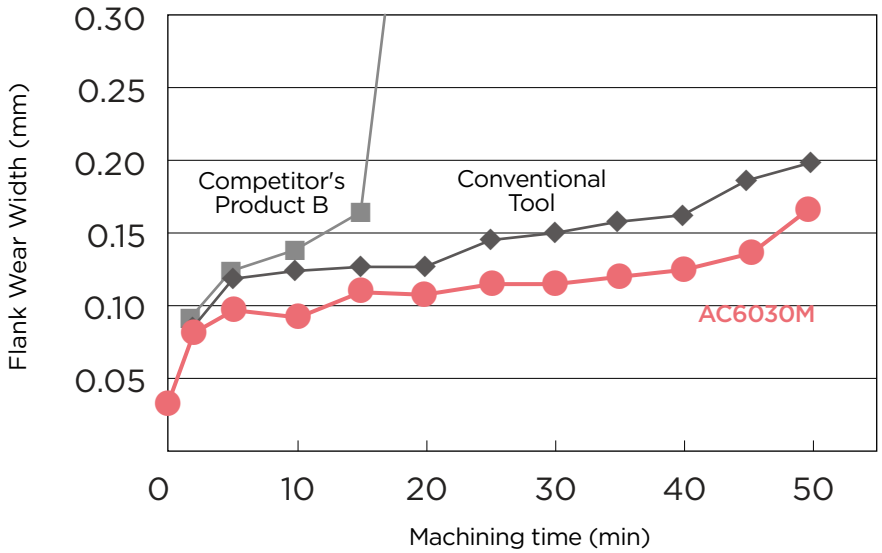


AC6020M

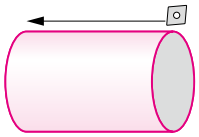


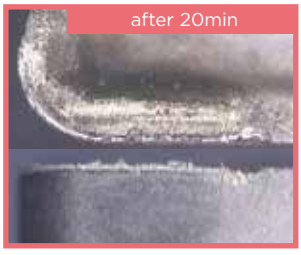
Competitor's Product A

■ Wear Resistance of AC6030M (Continuous Turning of Stainless Steel)

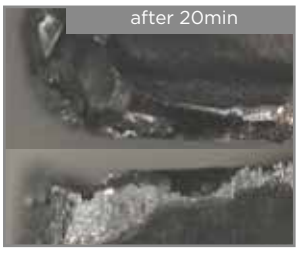


Work Material:	X5CrNiMo17-12-2 Continuous Turning
Insert:	CNMG120408
Cutting Conditions:	vc = 200m/min f = 0.2mm/rev ap = 2.0mm Wet



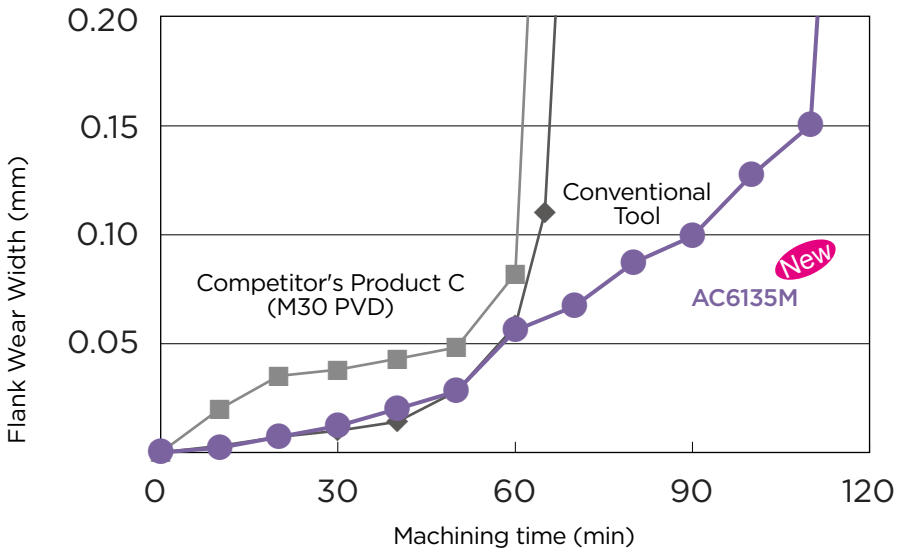


AC6030M

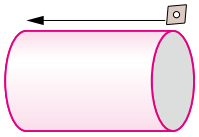


Competitor's Product B

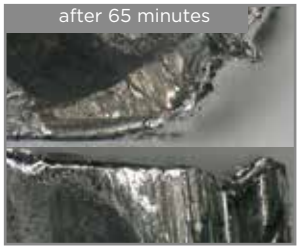
■ Wear Resistance of AC6135M (Continuous Turning of Stainless Steel)



Work Material: X5CrNiMo17-12-2
Continuous Turning
Insert: CNMG120408
Cutting Conditions: Vc = 150m/min
f = 0.2mm/rev
ap = 2.0mm
Wet

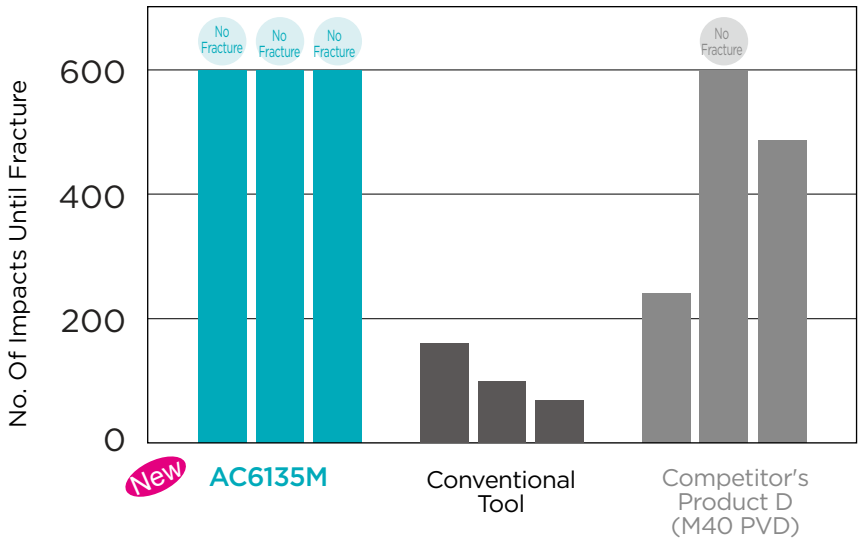


AC6135M New

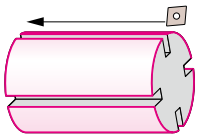


Competitor's Product C (M30 PVD)

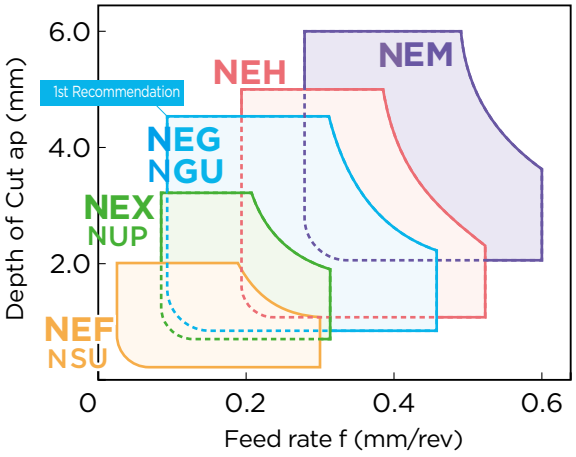
■ Fracture Resistance of AC6145M (Interrupted Turning of Stainless Steel)



Work Material: X5CrNiMo17-12-2
Interrupted Turning
Insert: CNMG120408
Cutting Conditions: vc = 70m/min
f = 0.25mm/rev
ap = 1.0mm
Wet



Chipbreaker Application Range

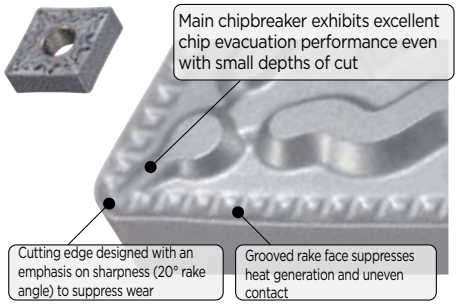


Chipbreaker series for stainless steel turning includes EF type for finishing, EX type for finishing to medium cutting, EG and GU types for medium cutting, and EM type for roughing. In addition, EH type for medium cutting to roughing and interrupted applications is also available

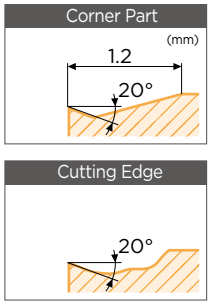
The entire series meets various needs such as chip control performance, wear resistance performance, fracture resistance performance and so on, realising stability in stainless steel turning

■ Features of Chipbreakers

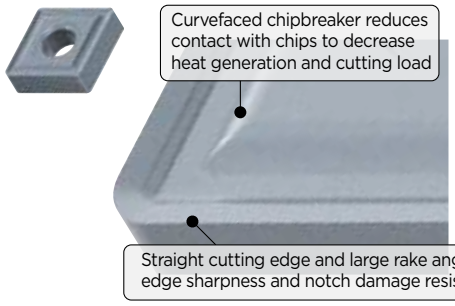
NEF type For Finishing



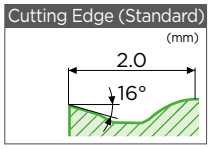
Chipbreaker Cross Section (CNMG1204SS type)



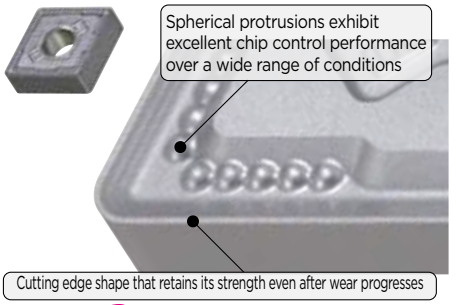
NEX type For Light to Medium Cutting



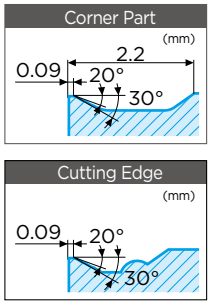
Chipbreaker Cross Section (CNMG1204SS type)



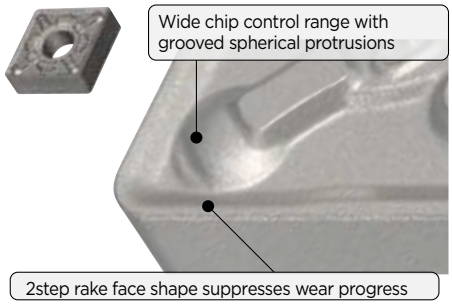
NEG type For Medium Cutting



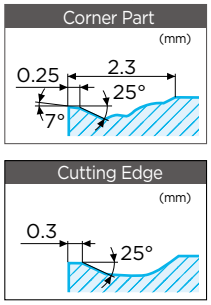
Chipbreaker Cross Section (CNMG1204SS type)



NGU type For Medium Cutting

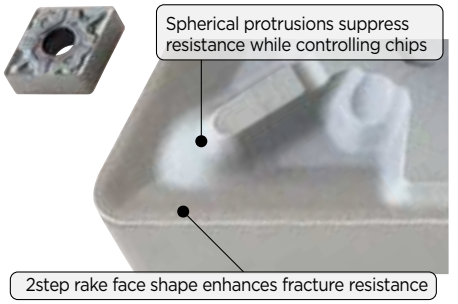


Chipbreaker Cross Section (CNMG1204SS type)

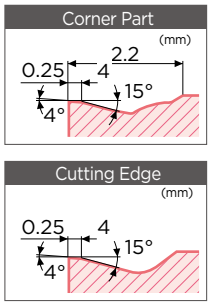


NEH type For Medium Cutting to Roughing

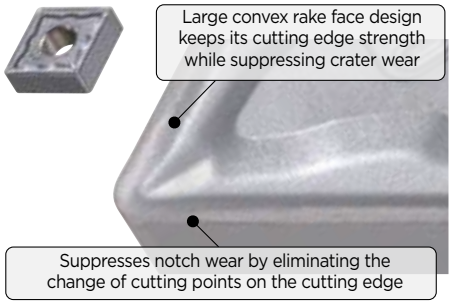
New



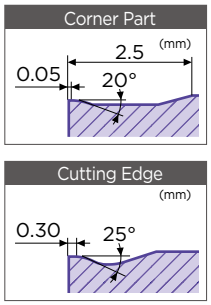
Chipbreaker Cross Section (CNMG1204SS type)



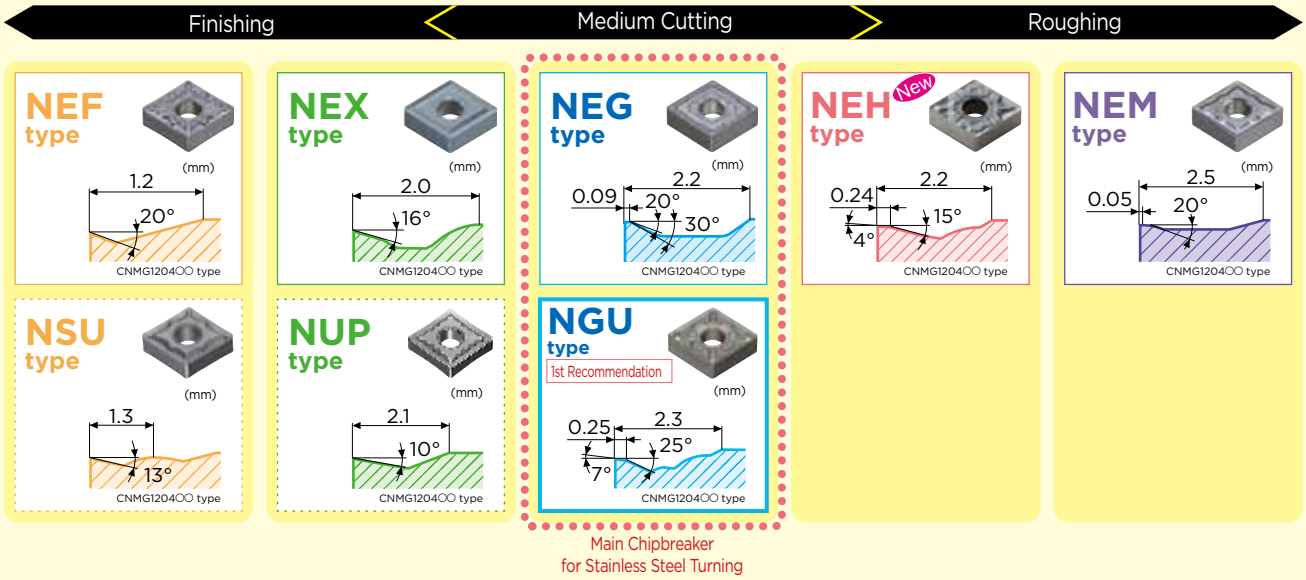
NEM type ForRoughing



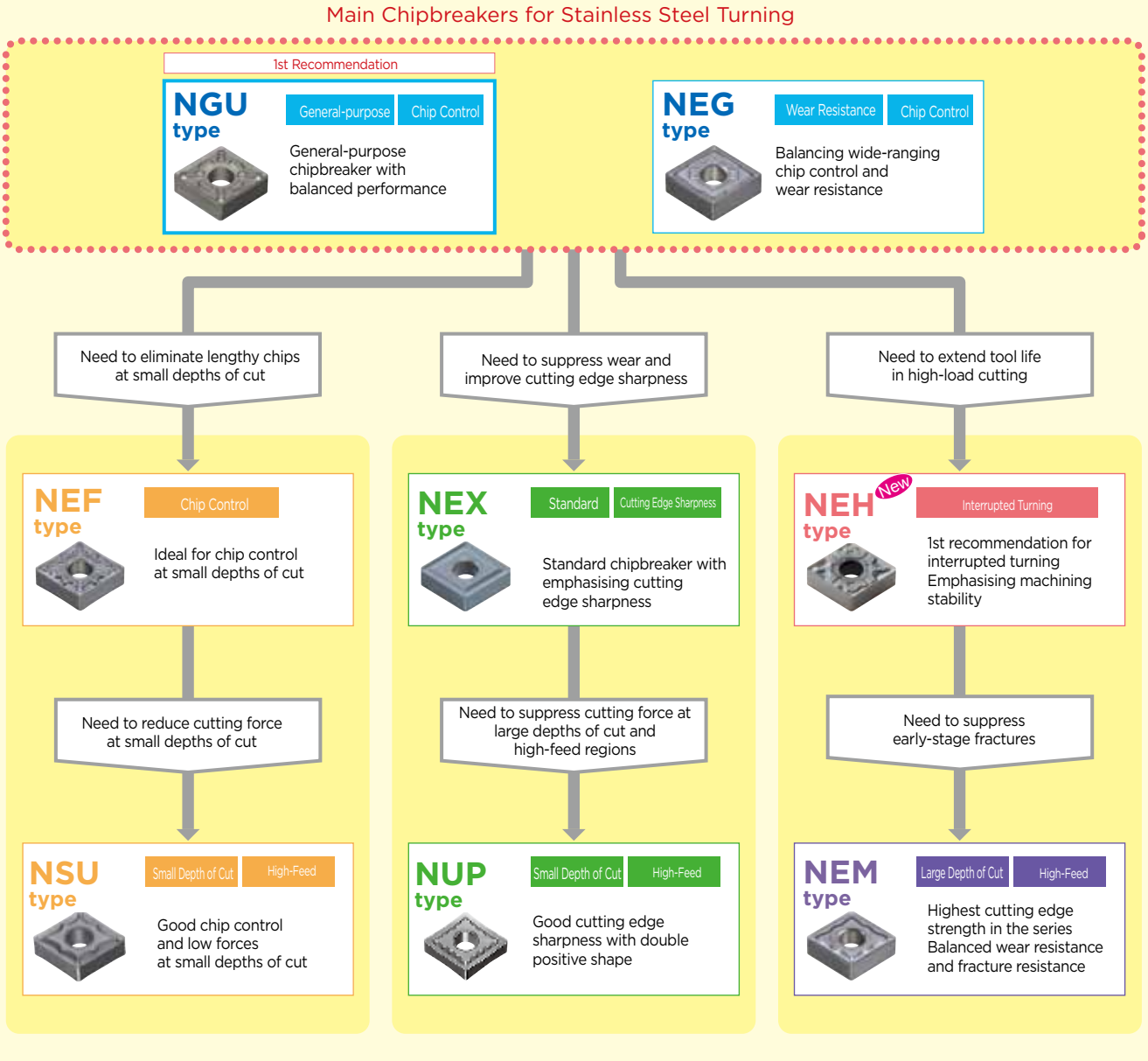
Chipbreaker Cross Section (CNMG1204SS type)



■ Applications of Chipbreakers (Negative Inserts): Application Range



■ Applications of Chipbreakers (Negative Inserts): Troubleshooting



80° Diamond type Negative Inserts

Shape	Cat. No.	Stock AC6020M	Stock AC6030M	Stock AC6135M	Stock AC6145M	Dimensions (mm) Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	CNMG 090304 NFE		○	○	○	9.525	3.18	3.81	0.4
	090308 NFE		○	○	○				0.8
	CNMG 090404 NFE		○	○	○	9.525	4.76	3.81	0.4
	090408 NFE		○	○	○				0.8
	CNMG 120402 NFE		○	○	○	12.7	4.76	5.16	0.2
	120404 NFE		○	○	○				0.4
	120408 NFE		○	○	○				0.8
	120412 NFE		○	○	○				1.2
	CNMG 090304 NLU		○			9.525	3.18	3.81	0.4
	090308 NLU		○						0.8
	CNMG 120402 NLU		○			12.7	4.76	5.16	0.2
	120404 NLU		○						0.4
	120408 NLU		○						0.8
	120412 NLU		○						1.2
	CNMG 120404 NLUW	●	○			12.7	4.76	5.16	0.4
	120408 NLUW		○						0.8
	120412 NLUW		○						1.2
	CNMG 090304 NSU					9.525	3.18	3.81	0.4
	090308 NSU								0.8
	CNMG 120402 NSU		●	○	○	12.7	4.76	5.16	0.2
	120404 NSU	●	●	○	○				0.4
	120408 NSU	●	●	○	○				0.8
	120412 NSU	○	○	○	○				1.2
	CNMG 090404 NEF	○	○	○	○	9.525	4.76	3.81	0.4
	090408 NEF	○	○	○	○				0.8
	CNMG 120404 NEF	●	●	○	○	12.7	4.76	5.16	0.4
	120408 NEF	●	●	○	○				0.8
	120412 NEF	○	○	○	○				1.2
	CNMG 120404 NEX	●	●	○	○	12.7	4.76	5.16	0.4
	120408 NEX	●	●	●	●				0.8
	120412 NEX	○	●	○	○				1.2
	120416 NEX			○	○				1.6
	CNMG 160612 NEX			○	○	15.875	6.35	6.35	1.2
	CNMG 190612 NEX			○	○	19.05	6.35	7.94	1.2
	CNMG 120404 NUP	●	●	○	○	12.7	4.76	5.16	0.4
	120408 NUP	●	●	○	○				0.8
	120412 NUP	○	●	○	○				1.2
	CNMG 160612 NUP								
	CNMG 120404 NGU	○	●	○	○	12.7	4.76	5.16	0.4
	120408 NGU	●	●	●	●				0.8
	120412 NGU	●	●	○	○				1.2
	120416 NGU			○	○				1.6
	CNMG 160608 NGU		○	○	○	15.875	6.35	6.35	0.8
	160612 NGU		○	○	○				1.2
	160616 NGU		○	○	○				1.6
	CNMG 120408 NGUW					12.7	4.76	5.16	0.8
	120412 NGUW	●							1.2
	CNMG 090408 NEG	○	○	○	○	9.525	4.76	3.81	0.8
	090412 NEG	○	○	○	○				1.2
	CNMG 120404 NEG	○	●	○	○	12.7	4.76	5.16	0.4
	120408 NEG	●	●	●	●				0.8
	120412 NEG	●	●	○	○				1.2
	CNMG 160608 NEG	○	○	○	○	15.875	6.35	6.35	0.8
	160612 NEG	○	○	○	○				1.2
	160616 NEG	○		○	○				1.6
	CNMG 190612 NEG	○	●	○	○	19.05	6.35	7.94	1.2
	190616 NEG	○	○	○	○				1.6
	CNMG 120408 NMU	●	●			12.7	4.76	5.16	0.8
	120412 NMU	●	●						1.2
	CNMG 160612 NMU		●			15.875	6.35	6.35	1.2
	160616 NMU	●	○						1.6
	CNMG 190612 NMU		●			19.05	6.35	7.94	1.2
	190616 NMU		●						1.6
	CNMG 120404 NEH			○	○	12.7	4.76	5.16	0.4
	120408 NEH			●	●				0.8
	120412 NEH			●	●				1.2
	120416 NEH			○	○				1.6
	CNMG 190612 NEH			○	○	19.05	6.35	7.94	1.2
	190616 NEH			○	○				1.6

80° Diamond type Negative Inserts

Shape	Cat. No.	Stock AC6020M	Stock AC6030M	Stock AC6135M	Stock AC6145M	Dimensions (mm) Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	CNMG 120408 NEM	●	●	●	●	12.7	4.76	5.16	0.8
	120412 NEM	●	●	●	●				1.2
	120416 NEM	○	○	○	○				1.6
	CNMG 160608 NEM	○	○	○	○	15.875	6.35	6.35	0.8
	160612 NEM	●	●	●	●				1.2
	160616 NEM	●	●	●	●				1.6
	CNMG 190612 NEM	○	●	○	○	19.05	6.35	7.94	1.2
	190616 NEM	○	○	○	○				1.6
	190624 NEM	○	○	○	○				2.4
	CNMG 250924 NEM			○	○	25.4	9.52	9.12	2.4
	CNMG 160616 NUX					15.875	6.35	6.35	1.6
	CNMG 160608 NMU					15.875	6.35	6.35	0.8
	160612 NMU								1.2
	CNMG 190612 NMU					19.05	6.35	7.94	1.2
	190616 NMU								1.6
	CNMM 120408 NMP		●	○	○	12.7	4.76	5.16	0.8
	120412 NMP		●	○	○				1.2
	120416 NMP		○						1.6
	CNMM 160608 NMP		○			15.875	6.35	6.35	0.8
	160612 NMP		○						1.2
	160616 NMP		○						1.6
	CNMM 190608 NMP		○			19.05	6.35	7.94	0.8
	190612 NMP		●						1.2
	190616 NMP		●	○	○				1.6
	190624 NMP		○	○	○				2.4

55° Diamond type Negative Inserts

Shape	Cat. No.	Stock AC6020M	Stock AC6030M	Stock AC6135M	Stock AC6145M	Dimensions (mm) Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	DNMG 110404 NFE		○	○	○	9.525	4.76	3.81	0.4
	110408 NFE		○	○	○				0.8
	110412 NFE		○	○	○				1.2
	DNMG 150402 NFE		○	○	○	12.7	4.76	5.16	0.2
	150404 NFE		○	○	○				0.4
	150408 NFE		○	○	○				0.8
	150412 NFE		○	○	○				1.2
	DNMG 150602 NFE		○	○	○	12.7	6.35	5.16	0.2
	150604 NFE		○	○	○				0.4
	150608 NFE		○	○	○				0.8
	150612 NFE		○	○	○				1.2
	DNMG 110404 NLU		○			9.525	4.76	3.81	0.4
	110408 NLU		○						0.8
	DNMG 150402 NLU		○			12.7	4.76	5.16	0.2
	150404 NLU		○						0.4
	150408 NLU		○						0.8
	150412 NLU		○						1.2
	DNMG 110404 NSU	●	○	○	○	9.525	4.76	3.81	0.4
	110408 NSU	○	○	○	○				0.8
	110412 NSU			○	○				1.2
	DNMG 150402 NSU		○	○	○	12.7	4.76	5.16	0.2
	150404 NSU	○	○	○	○				0.4
	150408 NSU		○	○	○				0.8
	150412 NSU		○	○	○				1.2
	DNMG 150604 NSU	●				12.7	6.35	5.16	0.4
	150608 NSU	●							0.8

55° Diamond type Negative Inserts

Shape	Cat. No.	Stock AC6020M	Stock AC6030M	Stock AC6135M	Stock AC6145M	Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	DNMG 110404 NEF	●	●	○	○	9.525	4.76	3.81	0.4
	110408 NEF	●	○	○	○				0.8
	110412 NEF	○	○	○	○				1.2
	DNMG 150404 NEF	○	○	○	○	12.7	4.76	5.16	0.4
	150408 NEF	○	○	○	○				0.8
	150412 NEF	○	○	○	○				1.2
	DNMG 150604 NEF	●	●	○	○	12.7	6.35	5.16	0.4
	150608 NEF	●	●	○	○				0.8
	150612 NEF	○	○	○	○				1.2
	DNMG 110404 NEX					9.525	4.76	3.81	0.4
	110408 NEX								0.8
	DNMG 150404 NEX	○	○	○	○	12.7	4.76	5.16	0.4
	150408 NEX	○	○	○	○				0.8
	150412 NEX	○	○	○	○				1.2
	DNMG 150604 NEX	●	●	○	○	12.7	6.35	5.16	0.4
	150608 NEX	●	●	○	○				0.8
	150612 NEX	○	○	○	○				1.2
	DNMG 150404 NUP		○	○	○	12.7	4.76	5.16	0.4
	150408 NUP		○	○	○				0.8
	150412 NUP		○	○	○				1.2
	DNMG 150604 NUP	●				12.7	6.35	5.16	0.4
	150608 NUP	●							0.8
	DNMG 150612 NUP								1.2
	DNMG 110404 NGU	○	●	○	○	9.525	4.76	3.81	0.4
	110408 NGU	○	●	○	○				0.8
	110412 NGU	○		○	○				1.2
	DNMG 150404 NGU	○	○	○	○	12.7	4.76	5.16	0.4
	150408 NGU	○	○	○	○				0.8
	150412 NGU	○	○	○	○				1.2
	DNMG 150604 NGU	●				12.7	6.35	5.16	0.4
	150608 NGU	●	●	○	○				0.8
	150612 NGU	○	●	○	○				1.2
	DNMG 110408 NEG	○	●	○	○	9.525	4.76	3.81	0.8
	110412 NEG	○	○	○	○				1.2
	DNMG 150404 NEG	○	○	○	○	12.7	4.76	5.16	0.4
	150408 NEG	○	○	○	○				0.8
	150412 NEG	○	○	○	○				1.2
	DNMG 150604 NEG	○	●	○	○	12.7	6.35	5.16	0.4
	150608 NEG	●	●	○	○				0.8
	150612 NEG	○	●	○	○				1.2
	DNMG 150408 NMU		○			12.7	4.76	5.16	0.8
	150412 NMU		○						1.2
	DNMG 150608 NMU		●			12.7	6.35	5.16	0.8
	150612 NMU		○						1.2
	150616 NMU								1.6
	DNMG 150404 NEH			○	○	12.7	4.76	5.16	0.4
	150408 NEH			○	○				0.8
	150412 NEH			○	○				1.2
	DNMG 150608 NEH			●	●	12.7	6.35	5.16	0.8
	150612 NEH			●	●				1.2
	DNMG 150408 NEM	○	○	○	○	12.7	4.76	5.16	0.8
	150412 NEM	○	○	○	○				1.2
	150416 NEM	○	○	○	○				1.6
	DNMG 150608 NEM	○	●	●	●	12.7	6.35	5.16	0.8
	150612 NEM	○	●	○	○				1.2
	DNMG 150404 RHM		○			12.7	4.76	5.16	0.4
	150404 LHM		○						0.4
	150408 RHM		○						0.8
	150408 LHM		○						0.8

Square type Negative Inserts

Shape	Cat. No.	Stock AC6020M	Stock AC6030M	Stock AC6135M	Stock AC6145M	Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	SNMG 120404 NFE		○	○	○	12.7	4.76	5.16	0.4
	120408 NFE		○	○	○				0.8
	120412 NFE		○	○	○				1.2
	SNMG 120408 NLU		○			12.7	4.76	5.16	0.8
	120412 NLU		○						1.2
	SNMG 120408 NSU	○	○	○	○	12.7	4.76	5.16	0.8
	SNMG 120404 NEF	○	○	○	○	12.7	4.76	5.16	0.4
	120408 NEF	○	○	○	○				0.8
	SNMG 120404 NEX	○	●	○	○	12.7	4.76	5.16	0.4
	120408 NEX	○	●	○	○				0.8
	120412 NEX	○	●	○	○				1.2
	SNMG 150612 NEX			○	○	15.875	6.35	6.35	1.2
	SNMG 190612 NEX			○	○	19.05	6.35	7.94	1.2
	SNMG 120404 NUP		○	○	○	12.7	4.76	5.16	0.4
	120408 NUP	○	●	○	○				0.8
	120412 NUP	○	○	○	○				1.2
	SNMG 120404 NGU	○	○	○	○	12.7	4.76	5.16	0.4
	120408 NGU	●	●	○	○				0.8
	120412 NGU	●	○	○	○				1.2
	120416 NGU								1.6
	SNMG 150608 NGU		○	○	○	15.875	6.35	6.35	0.8
	150612 NGU		○	○	○				1.2
	150616 NGU			○	○				1.6
	SNMG 120404 NEG	○	○	○	○	12.7	4.76	5.16	0.4
	120408 NEG	○	●	○	○				0.8
	120412 NEG	●	○	○	○				1.2
	SNMG 150608 NEG	○		○	○	15.875	6.35	6.35	0.8
	150612 NEG	○	○	○	○				1.2
	150616 NEG	○		○	○				1.6
	SNMG 190612 NEG	○	○	○	○	19.05	6.35	7.94	1.2
	190616 NEG	○	○	○	○				1.6
	SNMG 120408 NMU	●	○			12.7	4.76	5.16	0.8
	120412 NMU	●	●						1.2
	120416 NMU								1.6
	SNMG 150612 NMU		○			15.875	6.35	6.35	1.2
	150616 NMU		○						1.6
	SNMG 190612 NMU		●			19.05	6.35	7.94	1.2
	190616 NMU		○						1.6
	SNMG 120404 NEH			○	○	12.7	4.76	5.16	0.4
	120408 NEH			○	○				0.8
	120412 NEH			○	○				1.2
	SNMG 190612 NEH			○	○	19.05	6.35	7.94	1.2
	190616 NEH			○	○				1.6
	SNMG 120408 NEM	○	●	○	○	12.7	4.76	5.16	0.8
	120412 NEM	●	●	○	○				1.2
	120416 NEM								1.6
	SNMG 150608 NEM	○	○	○	○	15.875	6.35	6.35	0.8
	150612 NEM	○	●	○	○				1.2
	150616 NEM	○	○	○	○				1.6
	SNMG 190612 NEM	○	○	○	○	19.05	6.35	7.94	1.2
	190616 NEM	○	●	○	○				1.6
	190624 NEM	○		○	○				2.4
	SNMG 250924 NEM		○	○	○	25.4	9.52	9.12	2.4
	SNMG 120408 RHM		○			12.7	4.76	5.16	0.8
	120408 LHM		○						0.8
	SNMM 120408 NMP		●	○	○	12.7	4.76	5.16	0.8
	120412 NMP		○	○	○				1.2
	120416 NMP		○						1.6
	SNMM 150612 NMP		○			15.875	6.35	6.35	1.2
	150616 NMP		○						1.6
	SNMM 190612 NMP		●	○	○	19.05	6.35	7.94	1.2
	190616 NMP		●	○	○				1.6
	SNMM 250724 NMP		○			25.4	7.94	9.12	2.4
	SNMM 250924 NMP		○			25.4	9.52	9.12	2.4
	SNMM 310924 NMP		○			31.75	9.52	8.8	2.4

● Euro stock ○ Japan stock

Triangular type Negative Inserts

Shape	Cat. No.	Stock AC6020M	Stock AC6030M	Stock AC6135M	Stock AC6145M	Dimensions (mm) Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	TNMG 160402 NFE		○	○	○	9.525	4.76	3.81	0.2
	160404 NFE		○	○	○				0.4
	160408 NFE		○	○	○				0.8
	160412 NFE		○	○	○				1.2
	TNMG 160402 NLU		○			9.525	4.76	3.81	0.2
	160404 NLU		○						0.4
	160408 NLU		○						0.8
	160412 NLU		○						1.2
	TNMG 160402 NSU	○	○	○	○	9.525	4.76	3.81	0.2
	160404 NSU	●	●	○	○				0.4
	160408 NSU	○	●	○	○				0.8
	160412 NSU		○	○	○				1.2
	TNMG 160404 NEF	●	○	○	○	9.525	4.76	3.81	0.4
	160408 NEF	●	●	○	○				0.8
	TNMG 160404 NEX	○	●	○	○	9.525	4.76	3.81	0.4
	160408 NEX	●	●	○	○				0.8
	160412 NEX	○	○	○	○				1.2
	TNMG 160404 NUP	○	○	○	○	9.525	4.76	3.81	0.4
	160408 NUP	○	●	○	○				0.8
	160412 NUP		○	○	○				1.2
	TNMG 220408 NUP			○	○	12.7	4.76	5.16	0.8
	220412 NUP			○	○				1.2
	TNMG 160404 NGU	○	●	○	○	9.525	4.76	3.81	0.4
	160408 NGU	○	●	○	○				0.8
	160412 NGU	○	○	○	○				1.2
	TNMG 220408 NGU			○	○	12.7	4.76	5.16	0.8
	220412 NGU			○	○				1.2
	TNMG 160404 NEG	○	●	○	○	9.525	4.76	3.81	0.4
	160408 NEG	○	●	○	○				0.8
	160412 NEG	●	○	○	○				1.2
	TNMG 160408 NMU	●	●			9.525	4.76	3.81	0.8
	160412 NMU		●						1.2
	TNMG 220408 NMU	●		○	○	12.7	4.76	5.16	0.8
	220412 NMU			○	○				1.2
	220416 NMU								1.6
	TNMG 160404 NEH			○	○	9.525	4.76	3.81	0.4
	160408 NEH			○	○				0.8
	160412 NEH			○	○				1.2
	TNMG 160408 NEM	○	●	○	○	9.525	4.76	3.81	0.8
	160412 NEM	○	○	○	○				1.2
	TNMG 330924 NEM		○	○	○	19.05	9.52	7.93	2.4
	TNMG 160404 RHM		●			9.525	4.76	3.81	0.4
	160404 LHM		●						0.4
	160408 RHM		●						0.8
	160408 LHM		●						0.8

35° Diamond type Negative Inserts

Shape	Cat. No.	Stock AC6020M	Stock AC6030M	Stock AC6135M	Stock AC6145M	Dimensions (mm) Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	VNMG 160402 NFE		○	○	○	9.525	4.76	3.81	0.2
	160404 NFE		○	○	○				0.4
	160408 NFE		○	○	○				0.8
	160412 NFE		○	○	○				1.2
	VNMG 160402 NLU		○			9.525	4.76	3.81	0.2
	160404 NLU		○						0.4
	160408 NLU		○						0.8
	VNMG 160402 NSU		○	○	○	9.525	4.76	3.81	0.2
	160404 NSU	○	●	○	○				0.4
	160408 NSU	○	●	○	○				0.8
	VNMG 160402 NEF	○	○	○	○	9.525	4.76	3.81	0.2
	160404 NEF	○	○	○	○				0.4
	160408 NEF	○	○	○	○				0.8
	VNMG 160404 NEX	○	●	○	○	9.525	4.76	3.81	0.4
	160408 NEX	○	○	○	○				0.8
	VNMG 160404 NUP	○	○	○	○	9.525	4.76	3.81	0.4
	160408 NUP	○	○	○	○				0.8
	VNMG 160404 NGU	○	●	○	○	9.525	4.76	3.81	0.4
	160408 NGU	○	●	○	○				0.8
	160412 NGU			○	○				1.2
	VNMG 160404 NEG	○	○	○	○	9.525	4.76	3.81	0.4
	160408 NEG	○	●	○	○				0.8
	160412 NEG	○	○	○	○				1.2

Trigon type Negative Inserts

Shape	Cat. No.	Stock AC6020M	Stock AC6030M	Stock AC6135M	Stock AC6145M	Dimensions (mm) Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	WNMG 060404 NFE		○	○	○	9.525	4.76	3.81	0.4
	060408 NFE		○	○	○				0.8
	WNMG 080402 NFE		○	○	○	12.7	4.76	5.16	0.2
	080404 NFE		○	○	○				0.4
	080408 NFE		○	○	○				0.8
	080412 NFE		○	○	○				1.2
	WNMG 080404 NLU		○			12.7	4.76	5.16	0.4
	080408 NLU		○						0.8
	080412 NLU		○						1.2
	WNMG 060404 NLUW		○			9.525	4.76	3.81	0.4
	060408 NLUW		○						0.8
	WNMG 080404 NLUW		○			12.7	4.76	5.16	0.4
	080408 NLUW		○						0.8
	080412 NLUW		○						1.2
	WNMG 060404 NSU	○	○	○	○	9.525	4.76	3.81	0.4
	060408 NSU	○	○	○	○				0.8
	060412 NSU			○	○				1.2
	WNMG 080404 NSU	○	●	○	○	12.7	4.76	5.16	0.4
	080408 NSU	●	●	○	○				0.8
	080412 NSU		○	○	○				1.2
	WNMG 060404 NEF	○	●	○	○	9.525	4.76	3.81	0.4
	060408 NEF	○	●	○	○				0.8
	WNMG 080404 NEF	○	○	○	○	12.7	4.76	5.16	0.4
	080408 NEF	○	●	○	○				0.8
	WNMG 060404 NEX					9.525	4.76	3.81	0.4
	060408 NEX	●							0.8
	WNMG 080404 NEX	○	●	○	○	12.7	4.76	5.16	0.4
	080408 NEX	●	●	○	○				0.8
	080412 NEX	●	●	○	○				1.2
	WNMG 080408 NUP	●	●	●	●	12.7	4.76	5.16	0.8
	080412 NUP		○	○	○				1.2
	WNMG 060404 NGU	○	○	○	○	9.525	4.76	3.81	0.4
	060408 NGU	●	●	○	○				0.8
	060412 NGU	○	○	○	○				1.2
	WNMG 080404 NGU	○	●	○	○	12.7	4.76	5.16	0.4
	080408 NGU	●	●	○	○				0.8
	080412 NGU	○	●	○	○				1.2
	WNMG 060408 NEG	○	○	○	○	9.525	4.76	3.81	0.8
	060412 NEG	○	○	○	○				1.2
	WNMG 080404 NEG	●		○	○	12.7	4.76	5.16	0.4
	080408 NEG	●	●	○	○				0.8
	080412 NEG	○	●	○	○				1.2
	WNMG 060408 NMU					9.525	4.76	3.81	0.8
	060412 NMU								1.2
	WNMG 080408 NMU		●			12.7	4.76	5.16	0.8
	080412 NMU	●	●						1.2
	WNMG 080404 NEH			○	○	12.7	4.76	5.16	0.4
	080408 NEH			○	○				0.8
	080412 NEH			○	○				1.2
	080416 NEH			○	○				1.6
	WNMG 080408 NEM	●	●	○	○	12.7	4.76	5.16	0.8
	080412 NEM	●	●	○	○				1.2

80° Diamond type Positive Inserts

Shape	Relief Angle	Cat. No.	Stock AC6020M	Stock AC6030M	Stock AC6135M	Stock AC6145M	Dimensions (mm) Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	7	CCMT 060202 NLU		○	○	○	6.35	2.38	2.8	0.2
		060204 NLU		●	○	○				0.4
		CCMT 09T302 NLU					9.525	3.97	4.4	0.2
		09T304 NLU	●	●	○	○				0.4
		09T308 NLU	●	●	○	○				0.8
	7	CCMT 09T304 NLUW	●				9.525	3.97	4.4	0.4
		09T308 NLUW								0.2
	7	CCMT 060202 NLB		○	○	○	6.35	2.38	2.8	0.2
		060204 NLB		○	●	●				0.4
		060208 NLB		○	○	○				0.8
		CCMT 09T302 NLB	○	○	○	○	9.525	3.97	4.4	0.2
		09T304 NLB	○	○	○	○				0.4
		09T308 NLB	○	○	○	○				0.8
	7	CCMT 060202 NSU		●	○	○	6.35	2.38	2.8	0.2
		060204 NSU		●	●	●				0.4
		060208 NSU	●	●	○	○				0.8
		CCMT 09T302 NSU	○	●	○	○	9.525	3.97	4.4	0.2
		09T304 NSU	●	●	○	○				0.4
		09T308 NSU	●	●	●	●				0.8
		CCMT 120404 NSU	●				12.7	4.76	5.16	0.4
		120408 NSU	●							0.8
	7	CCMT 060204 NGU		●	○	○	6.35	2.38	2.8	0.4
		060208 NGU		○	○	○				0.8
		CCMT 09T304 NGU	○	●	○	○	9.525	3.97	4.4	0.4
		09T308 NGU	●	●	○	○				0.8
		CCMT 120408 NGU					12.7	4.76	5.16	1.2
	7	CCMT 09T304 NMU	○	●			9.525	3.97	4.4	0.4
		09T308 NMU	○	●						0.8
	11	CPMT 090304 NLU	○	○	○	○	9.525	3.18	4.4	0.4
		090308 NLU		○	○	○				0.8
	11	CPMT 080204 NLB	○	○	○	○	7.94	2.38	3.4	0.4
		CPMT 090304 NLB	○	○	○	○	9.525	3.18	4.4	0.4
		090308 NLB	○	○	○	○				0.8
	11	CPMT 090304 NSU	○	○	○	○	9.525	3.18	4.4	0.4
		090308 NSU	○	○	○	○				0.8
	11	CPMT 090304 NGU	○	○	○	○	9.525	3.18	4.4	0.4
		090308 NGU	○	○	○	○				0.8
	11	CPMT 090304 NMU	○	○			9.525	3.18	4.4	0.4
		090308 NMU	○	○						0.8

55° Diamond type Positive Inserts

Shape	Relief Angle	Cat. No.	Stock AC6020M	Stock AC6030M	Stock AC6135M	Stock AC6145M	Dimensions (mm) Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	7	DCMT 070202 NLU		○	○	○	6.35	2.38	2.8	0.2
		070204 NLU	●	●	○	○				0.4
		DCMT 11T302 NLU	●		○	○	9.525	3.97	4.4	0.2
		11T304 NLU	●	●	○	○				0.4
		11T308 NLU	●	●	○	○				0.8
	7	DCMT 070202 NLB	○	●	○	○	6.35	2.38	2.8	0.2
		070204 NLB	○	○	○	○				0.4
		070208 NLB	○	○	○	○				0.8
		DCMT 11T302 NLB	○	●	○	○	9.525	3.97	4.4	0.2
		11T304 NLB	○	●	●	●				0.4
		11T308 NLB	○	●	○	○				0.8
	7	DCMT 070202 NSU	●	●	○	○	6.35	2.38	2.8	0.2
		070204 NSU	●	●	●	●				0.4
		070208 NSU	●	●	○	○				0.8
		DCMT 11T302 NSU	●	●	○	○	9.525	3.97	4.4	0.2
		11T304 NSU	●	●	●	●				0.4
		11T308 NSU	●	●	●	●				0.8
	7	DCMT 070204 NGU	○	○	○	○	6.35	2.38	2.8	0.4
		070208 NGU	○	○	○	○				0.8
		DCMT 11T302 NGU	○	○	○	○	9.525	3.97	4.4	0.2
		11T304 NGU	●	●	○	○				0.4
		11T308 NGU	●	●	○	○				0.8
		11T312 NGU		○						1.2
	7	DCMT 11T304 NMU	○	●			9.525	3.97	4.4	0.4
		11T308 NMU	○	●						0.8

Square type Positive Inserts

Shape	Relief Angle	Cat. No.	Stock AC6020M	Stock AC6030M	Stock AC6135M	Stock AC6145M	Dimensions (mm) Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	7	SCMT 09T304 NLU		○	○	○	9.525	3.97	4.4	0.4
		09T308 NLU		○	○	○				0.8
	7	SCMT 09T304 NLB	○	○	○	○	9.525	3.97	4.4	0.4
		09T308 NLB	○	○	●	●				0.8
	7	SCMT 09T304 NSU	○	○	○	○	9.525	3.97	4.4	0.4
		09T308 NSU	○	○	○	○				0.8
		SCMT 120404 NSU					12.7	4.76	5.16	0.4
		120408 NSU	●							0.8
	7	SCMT 09T304 NGU	○	○	○	○	9.525	3.97	4.4	0.4
		09T308 NGU	○	○	○	○				0.8
	7	SCMT 09T308 NMU	○	○			9.525	3.97	4.4	0.8
	11	SPMT 090304 NLU		○	○	○	9.525	3.18	3.4	0.4
		090308 NLU		○	○	○				0.8
	11	SPMT 090304 NLB	○	○	○	○	9.525	3.18	3.4	0.4
		090308 NLB	○	○	○	○				0.8

Triangular type Positive Inserts

Shape	Relief Angle	Cat. No.	Stock AC6020M	Stock AC6030M	Stock AC6135M	Stock AC6145M	Dimensions (mm) Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	7	TCMT 110204 NLU		○	○	○	6.35	2.38	2.8	0.4
		110208 NLU		○	○	○				0.8
		TCMT 16T304 NLU								
		16T304 NLU								
	7	TCMT 110204 NLB	○	○	○	○	6.35	2.38	2.8	0.4
		110208 NLB	○	○	○	○				0.8
	7	TCMT 110204 NSU	○	○	○	○	6.35	2.38	2.8	0.4
		110208 NSU	○	○	○	○				0.8
		TCMT 16T304 NSU	○	○	○	○	9.525	3.97	4.3	0.4
		16T308 NSU	○	○	○	○				0.8
	11	TPMT 080202 NLU		○	○	○	4.76	2.38	2.4	0.2
		080204 NLU		○	○	○				0.4
		TPMT 110302 NLU			○	○	6.35	3.18	3.4	0.2
		110304 NLU		●	○	○				0.4
		110308 NLU		○	○	○				0.8
	11	TPMT 080202 NLB	○	○	○	○	4.76	2.38	2.4	0.2
		080204 NLB	○	○	○	○				0.4
		TPMT 090202 NLB	○	○	○	○	5.56	2.38	2.8	0.2
		090204 NLB	○	○	○	○				0.4
		TPMT 110302 NLB	○		○	○	6.35	3.18	3.4	0.2
		110304 NLB	○	○	○	○				0.4
		110308 NLB	○	○	○	○				0.8
		TPMT 160304 NLB	○	○	○	○	9.525	3.18	4.4	0.4
		160308 NLB	○	○	○	○				0.8
		TPMT 160404 NLB	○	○	○	○	9.525	4.76	4.4	0.4
		160408 NLB	○	○	○	○				0.8
	11	TPMT 080202 NSU	○	○	○	○	4.76	2.38	2.4	0.2
		080204 NSU	○	○	○	○				0.4
		TPMT 110302 NSU	○	○	○	○	6.35	3.18	3.4	0.2
		110304 NSU	○	●	○	○				0.4
		110308 NSU	○	○	○	○				0.8
		TPMT 160404 NSU	○	○	○	○	9.525	4.76	4.4	0.4
		160408 NSU	○	○	○	○				0.8
	11	TPMT 110304 NGU	○	○	○	○	6.35	3.18	3.4	0.4
		110308 NGU	○	○	○	○				0.8
		TPMT 160404 NGU	○	○	○	○	9.525	4.76	4.4	0.4
		160408 NGU	○	○	○	○				0.8
	11	TPMT 110304 NMU	○	○			6.35	3.18	3.4	0.4
		110308 NMU	○	○						0.8
	11	TPMT 160404 NMU	○	○			9.525	4.76	4.4	0.4
		160408 NMU	○	○						0.8

● Euro stock ○ Japan stock

35° Diamond type Positive Inserts

Shape	Relief Angle	Cat. No.	Stock AC6020M	Stock AC6030M	Stock AC6135M	Stock AC6145M	Dimensions (mm) Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	5	VBMT 110304 NLU	●		○	○	6.35	3.18	2.8	0.4
		110308 NLU	●	○	○	○				0.8
		VBMT 160404 NLU		○	○	○	9.525	4.76	4.4	0.4
		160408 NLU		○	○	○				0.8
	5	VBMT 110302 NLB	○	○	○	○	6.35	3.18	2.8	0.2
		110304 NLB	○	○	○	○				0.4
		110308 NLB	○	○	○	○				0.8
		VBMT 160404 NLB	○	○	○	○	9.525	4.76	4.4	0.4
		160408 NLB	○	○	○	○				0.8
		160412 NLB	○	○	○	○				1.2
	5	VBMT 110204 NSU	●				6,35	2,38	2,8	0.4
		110208 NSU	●							0.8
		VBMT 110302 NSU			○	○	6.35	3.18	2.8	0.2
		110304 NSU	●		○	○				0.4
		110308 NSU	○		○	○				0.8
		VBMT 160404 NSU	●	●	○	○	9.525	4.76	4.4	0.4
		160408 NSU	●	●	○	○				0.8
	5	VBMT 110304 NGU	○	○	○	○	6.35	3.18	2.8	0.4
		110308 NGU	○	○	○	○				0.8
		VBMT 160404 NGU	○	●	○	○	9.525	4.76	4.4	0.4
		160408 NGU	○	●	○	○				0.8
	7	VCMT 160404 NLU		○	○	○	9.525	4.76	4.4	0.4
		160408 NLU		○	○	○				0.8
	7	VCMT 080202 NLB	○	○	○	○	4.76	2.38	2.3	0.2
		080204 NLB	○	○	○	○				0.4
		VCMT 160404 NLB	○	○	○	○	9.525	4.76	4.4	0.4
		160408 NLB	○	○	○	○				0.8
	7	VCMT 080204 NSU	○	○	○	○	4.76	2.38	2.3	0.4
		VCMT 110302 NSU	●	●	○	○	6.35	3.18	2.8	0.2
		110304 NSU	●	●	○	○				0.4
		110308 NSU	○	●	○	○				0.8
		VCMT 160404 NSU	●	●	○	○	9.525	4.76	4.4	0.4
		160408 NSU	○	●	○	○				0.8
	7	VCMT 160404 NGU		○	○	○	9.525	4.76	4.4	0.4
		160408 NGU		○	○	○				0.8

Positive Trigon type

Shape	Relief Angle	Cat. No.	Stock AC6020M	Stock AC6030M	Stock AC6135M	Stock AC6145M	Dimensions (mm) Inscribed Circle	Thickness	Hole Dia.	Corner Radius
	11	WPMT 110204 NLB	○				6.35	2.38	2.8	0.4
		WPMT 160308 NLB	○				9.525	3.18	4.4	0.8

● Euro stock ○ Japan stock

Applications of Chipbreakers (Negative Inserts): Application Range

Min. - **Optimum** - Max.

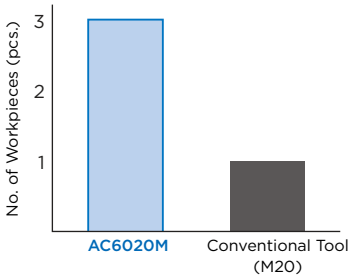
Work Material	Application	Chipbreaker	Grade	Cutting Conditions		
				Depth of Cut ap (mm)	Feed Rate f (mm/rev)	Cutting Speed vc (m/min)
Ferritic X6CrAl13, X2Cr12, X6Cr17, etc.	Finishing	NEF(NSU)	AC6020M	0.5 - 1.5 - 2.0	0.05 - 0.15 - 0.25	170 - 230 - 300
	Continuous	NEG/NGU/NEX	AC6030M	1.0 - 2.5 - 4.0	0.10 - 0.25 - 0.40	140 - 170 - 250
	Light Interruption	NGU/NEH	AC6135M	1.0 - 3.0 - 5.0	0.20 - 0.35 - 0.50	140 - 170 - 200
	Interrupted	NEH/NEM	AC6145M	1.5 - 3.5 - 6.0	0.25 - 0.40 - 0.60	100 - 130 - 160
Martensitic X12Cr13, X30Cr13, X110Cr17, etc.	Finishing	NEF(NSU)	AC6020M	0.5 - 1.5 - 2.0	0.05 - 0.15 - 0.25	120 - 180 - 240
	Continuous	NEG/NGU/NEX	AC6030M	1.0 - 2.5 - 4.0	0.10 - 0.25 - 0.40	100 - 150 - 200
	Light Interruption	NGU/NEH	AC6135M	1.0 - 3.0 - 5.0	0.20 - 0.35 - 0.50	80 - 130 - 180
	Interrupted	NEH/NEM	AC6145M	1.5 - 3.5 - 6.0	0.25 - 0.40 - 0.60	60 - 100 - 140
Austenitic X5CrNi18-10, X5CrNiMo17-12-2, X6CrNiTi18-10, etc.	Finishing	NEF(NSU)	AC6030M	0.5 - 1.5 - 2.0	0.05 - 0.15 - 0.25	120 - 180 - 240
	Continuous	NEG/NGU/NEX	AC6135M	1.0 - 2.5 - 4.0	0.10 - 0.25 - 0.40	100 - 150 - 200
	Light Interruption	NGU/NEH	AC6135M	1.0 - 3.0 - 5.0	0.20 - 0.35 - 0.50	80 - 130 - 180
	Interrupted	NEH/NEM	AC6145M	1.5 - 3.5 - 6.0	0.25 - 0.40 - 0.60	60 - 100 - 140
Duplex X6CrNiMo26-4-2, X2CrNiMoN22-5-3, X2CrNiMoN25-7-3, etc.	Finishing	NEF(NSU)	AC6030M	0.5 - 1.5 - 2.0	0.05 - 0.15 - 0.25	100 - 140 - 180
	Continuous	NEG/NGU/NEX	AC6135M	1.0 - 2.5 - 4.0	0.10 - 0.25 - 0.40	80 - 120 - 160
	Light Interruption	NGU/NEH	AC6135M	1.0 - 3.0 - 5.0	0.20 - 0.35 - 0.50	70 - 100 - 140
	Interrupted	NEH/NEM	AC6145M	1.5 - 3.5 - 6.0	0.25 - 0.40 - 0.60	50 - 80 - 120
Precipitation Hardened Structures X5CrNiCuNb16-4, X7CrNiAl17-7, etc.	Finishing	NEF(NSU)	AC6020M	0.5 - 1.5 - 2.0	0.05 - 0.15 - 0.25	90 - 115 - 140
	Continuous	NEG/NGU/NEX	AC6030M	1.0 - 2.5 - 4.0	0.10 - 0.25 - 0.40	70 -90 - 130
	Light Interruption	NGU/NEH	AC6135M	1.0 - 3.0 - 5.0	0.20 - 0.35 - 0.50	50 - 80 - 120
	Interrupted	NEH/NEM	AC6145M	1.5 - 3.5 - 6.0	0.25 - 0.40 - 0.60	40 - 70 - 100

Application Examples of AC6020M / AC6030M

X5CrNiMo17-12-2 Component

AC6020M M

AC6020M has good wear resistance with 3x longer tool life



Insert: CNMG120408N-GU (AC6020M) Continuous Turning
Cutting Conditions: vc = 180m/min f = 0.25mm/rev
ap = 3.0mm Wet

X5CrNiMo17-12-2 Casing

AC6020M M

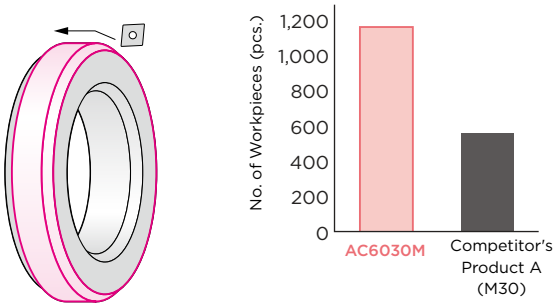
AC6020M's excellent chipping resistance performance improves tool life by 30%

Insert: SNMG120412N-GU (AC6020M) Continuous Turning
Cutting Conditions: vc = 180m/min f = 0.25mm/rev
ap = 2.5mm Wet

X6Cr17 Motorcycle Component

AC6030M M

AC6030M provides stable machined surface quality and achieves double tool life thanks to excellent adhesion resistance performance

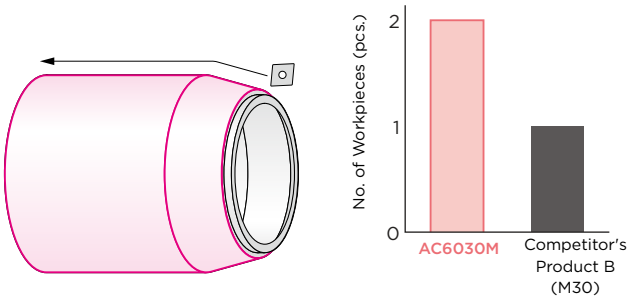


Insert: CNMG120404N-EF (AC6030M) Continuous Turning
Cutting Conditions: vc = 120m/min f = 0.1mm/rev
ap = 0.8 to 1.5mm Wet

X8CrNi-Mo27-5 - Casted Pump Component

AC6030M M

AC6030M achieves double tool life at 2.5x efficiency (vc = 60 → 100m/min, f = 0.2 → 0.3mm/rev) as well



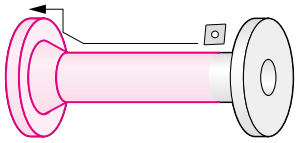
Insert: CNMG120408N-EG (AC6030M) Continuous Turning
Cutting Conditions: vc = 100m/min f = 0.3mm/rev
ap = 0.5mm Wet

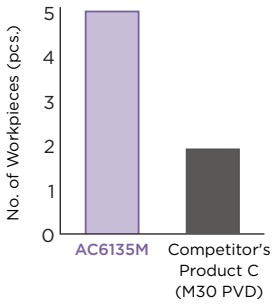
Application Examples of AC6135M / AC6145M

X5CrNiMo17-12-2 Pipe

AC6135M M

AC6135M suppresses crater wear and realises 2.5x tool life



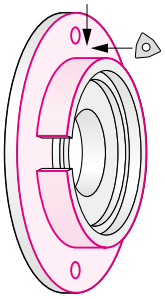


Insert: CNMG120408NGU (AC6135M)
Cutting Conditions: vc = 150m/min f = 0.25mm/rev
ap = 1.5mm Wet

X5CrNiMo17-12-2 Flange

AC6135M M

AC6135M suppresses crater wear and adhesion and realises stable machining



Cutting edge at preset output

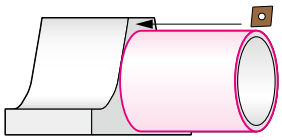
AC6135M | Competitor's Product D (M30 PVD)

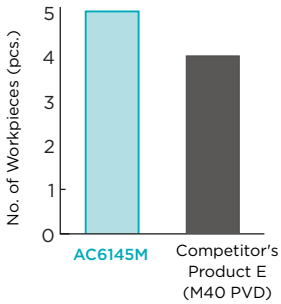
Insert: WNMG080408NGU (AC6135M)
Cutting Conditions: vc = 130m/min f = 0.15mm/rev
ap = 1.0mm Wet

X5CrNiMo17-12-2 Casted Valve

AC6145M M

AC6145M suppresses fractures and realises 1.3x longer tool life



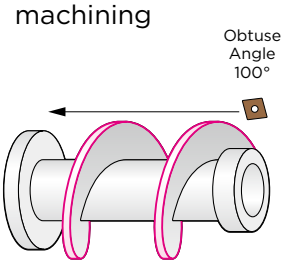


Insert: CNMG120408NEH (AC6145M) Interrupted Turning
Cutting Conditions: vc = 110m/min f = 0.15mm/rev
ap = 1.0mm Wet

X5CrNiMo17-12-2 Screw

AC6145M M

AC6145M suppresses chipping and thermal cracking and realises stable machining



Cutting edge at preset output

AC6145M | Competitor's Product F (M30 PVD)

Insert: CNMG120412NGU (AC6145M) Interrupted Turning
Cutting Conditions: vc = 110m/min f = 0.15mm/rev
ap = 1.5mm Wet

SUMITOMO
CARBIDE - CBN - DIAMOND

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