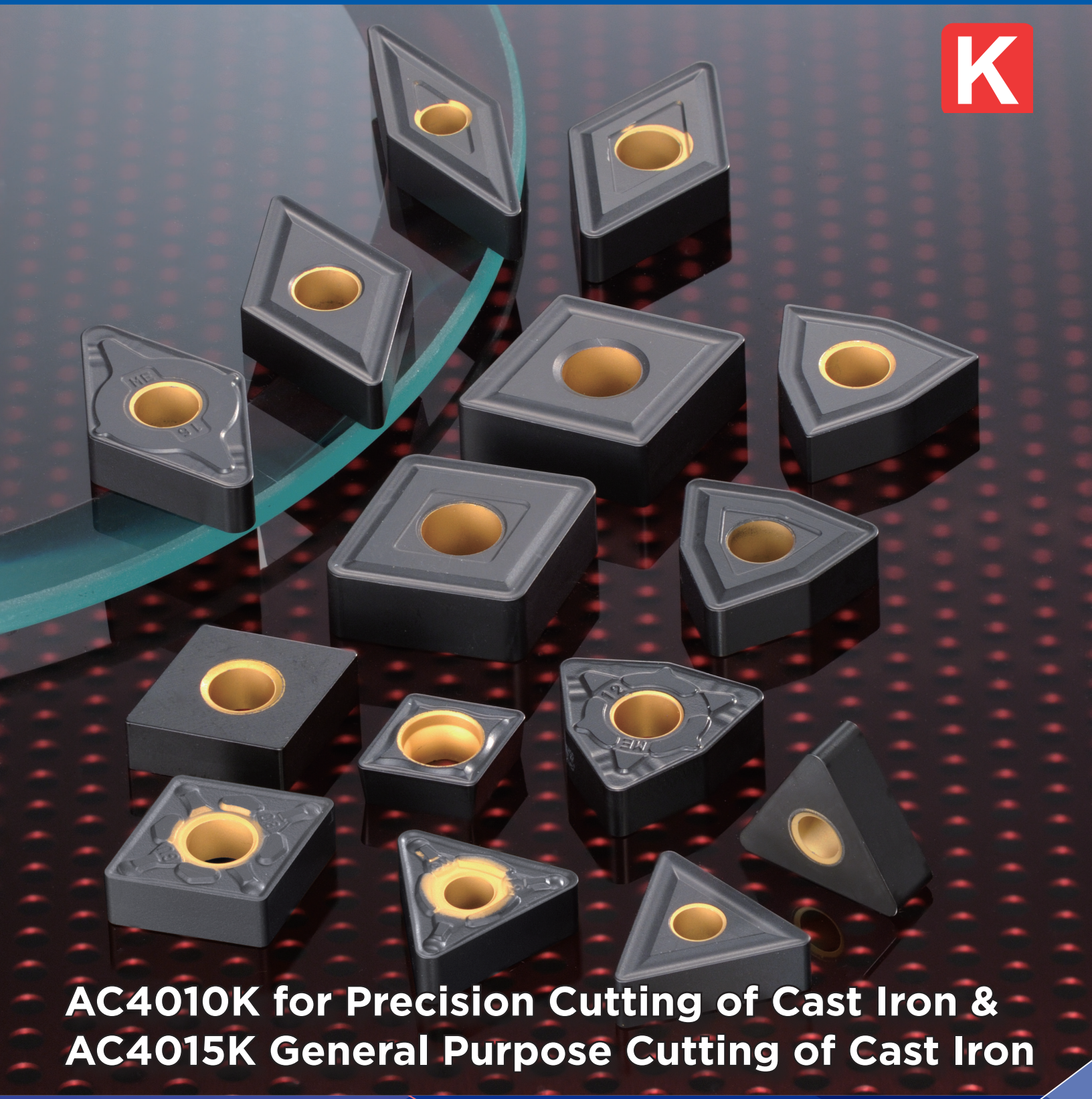
SUMITOMO

CARBIDE - CBN - DIAMOND

CAT.AC4000KBROCHURE.8/17

Grades for Cast Iron

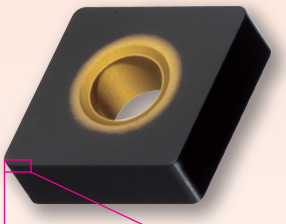
AC4010K \ AC4015K Series



AC4010K for Precision Cutting of Cast Iron & AC4015K General Purpose Cutting of Cast Iron

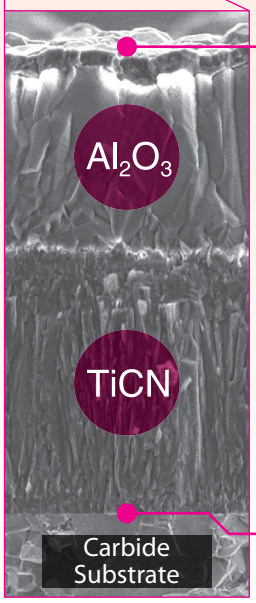
SUMITOMO ELECTRIC GROUP

■ AC4010K/AC4015K



■ Grade Description

Newly developed high adhesion technology, crystal orientation control technology, and residual stress control technology for **LONGER AND STABLE TOOL LIFE** with various cast irons—from gray cast iron to high-strength and ductile cast irons.



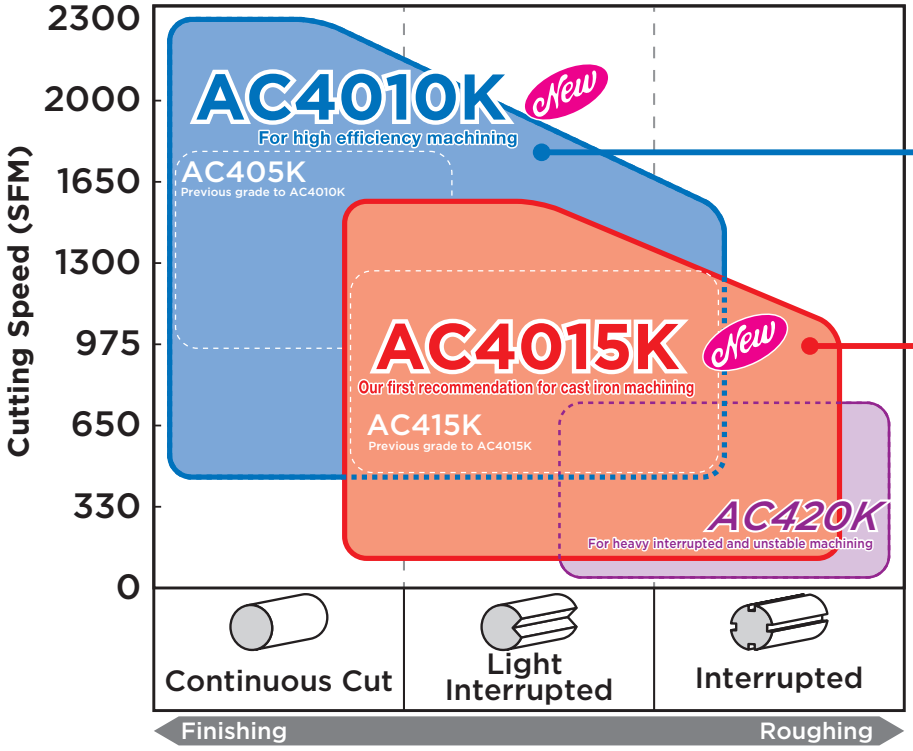
Special Surface Treatment — More than twice the compressive stress and 2× chipping resistance compared with conventional products

Crystal Orientation-Controlled Alumina Layer — 2× crater wear resistance for high-speed machining compared with conventional products

C-rich Fine TiCN Layer — 2× flank wear resistance compared with conventional products

High Adhesion Technology — Smooth cutting edge treatment (Rz 0.15μm → 0.07μm) for drastically improved peeling resistance

■ Application Range

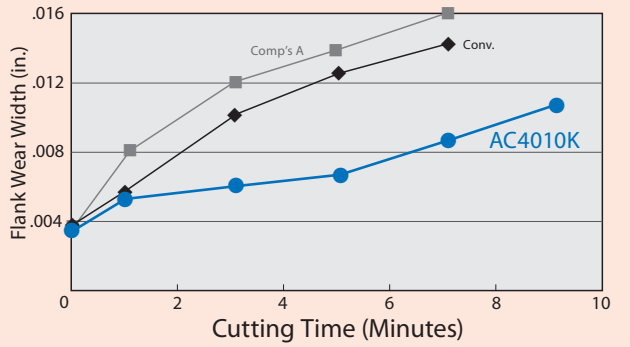


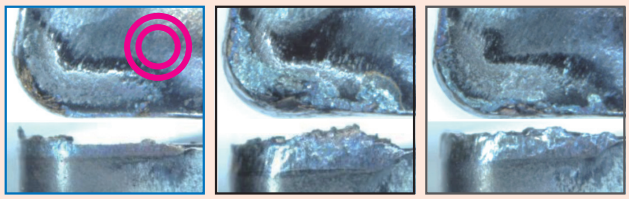
AC4010K New
Our first recommended grade for gray cast iron. Ultra-thick coating allows for ultra-high speed machining (vc = 2,300 SFM).

AC4015K New
Our first recommended grade for ductile cast iron. High-adhesion, high-strength coating provides longer and stable tool life.

AC420K
Excellent fracture resistance in heavy interrupted and unstable machining

■ AC4010K Application Examples

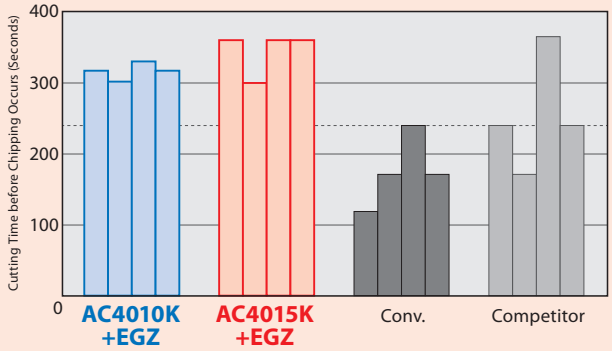


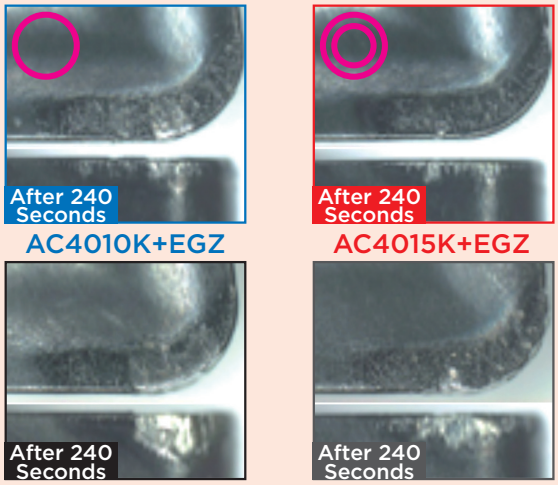


AC4010K+EGZ | Conv. | Competitor

Work Material: Gray Cast, Continuous **Insert**: CNMG432
Cutting Conditions: v_c = 1,950 SFM f = 0.016 IPR a_p = 0.078" Dry

■ AC4015K Application Examples





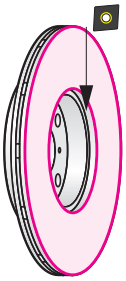
AC4010K+EGZ | AC4015K+EGZ

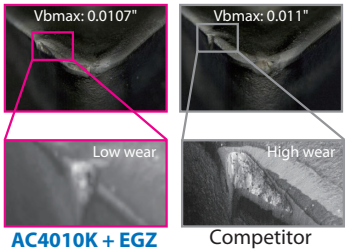
Conv. | Competitor

Work Material: Ductile Iron, Interupted **Insert**: CNMG432
Cutting Conditions: v_c = 1,100 sfm f = 0.012 IPR a_p = 0.059" Wet

Gray Cast Iron Brake disc — AC4010K

1.4× tool life thanks to minimal wear with the AC4010K





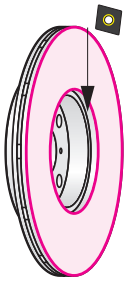
AC4010K + EGZ
70 Parts/ Corner

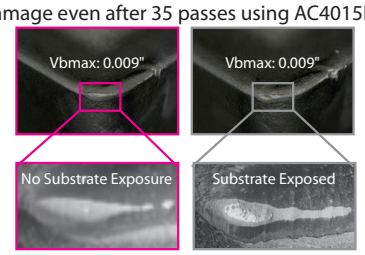
Competitor
50 Parts/ Corner

Insert: CNMG432 AC4010K Acute Angle Facing of Mill-Scaled Work
Cutting Conditions: v_c = 3,150 sfm f = 0.0296 IPR a_p = 0.078" Dry

Gray Cast Iron Brake disc — AC4015K

1.4× tool life with minimal damage even after 35 passes using AC4015K





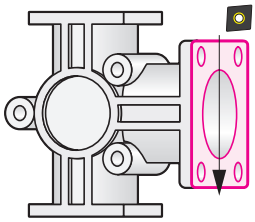
AC4015K + EGZ
35 Parts/ Corner

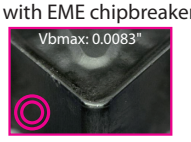
Competitor
35 Parts/ Corner

Insert: CNMG432 AC4015K Obtuse Angle Facing of Mill-Scaled Work
Cutting Conditions: v_c = 3,150 sfm f = 0.0296 IPR a_p = 0.078" Wet

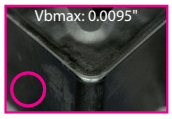
Ductile Iron Gear case — AC4010K AC4015K

1.2× tool life when combined with EME chipbreaker for roughing

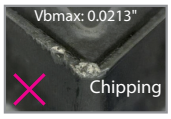




AC4015K + EME
12 Parts/ Corner



AC4010K + EME
12 Parts/ Corner

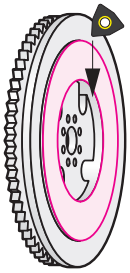


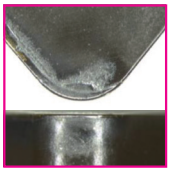
Competitor
10 Parts/ Corner

Insert: CNMG432 Interrupted
Cutting Conditions: v_c = 720 sfm f = 0.0134 IPR a_p = 0.059" Wet

Gray Cast Iron Flywheel — AC4015K

Minimal wear even after twice the cutting passes thanks to excellent wear resistance



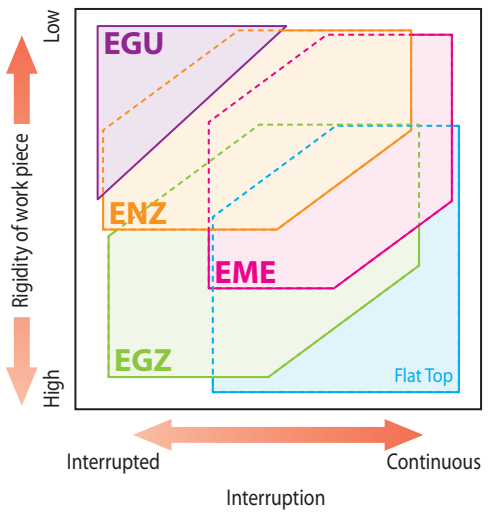


AC4015K + EME
80 Parts/ Corner

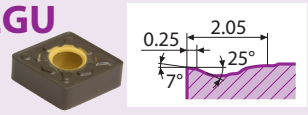
Competitor
40 Parts/ Corner

Insert: WNMA432 Continuous
Cutting Conditions: v_c = 750 sfm f = 0.0119 IPR a_p = 0.078" Wet

■ Chipbreaker Selection Guide

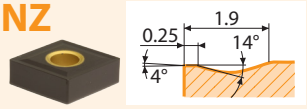


EGU



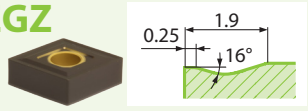
Low cutting force chipbreakers suitable for low-rigidity work such as with small-diameter or long pieces

ENZ



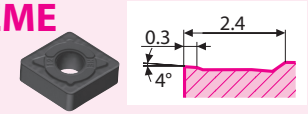
General finishing chipbreaker offering both sharpness and strength

EGZ



First-recommended chipbreaker with excellent cutting edge strength and versatility

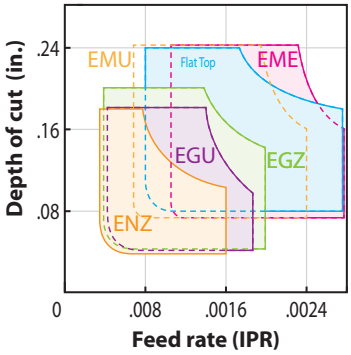
EME

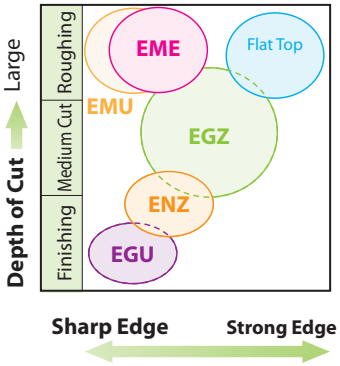


Roughing chipbreaker offering both sharpness and strength in high-feed cutting

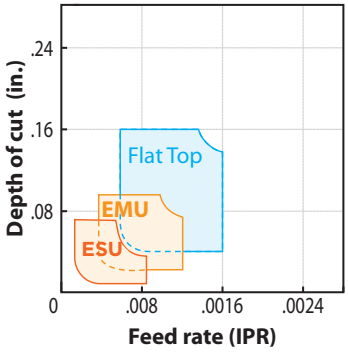
■ Chipbreaker Application Range

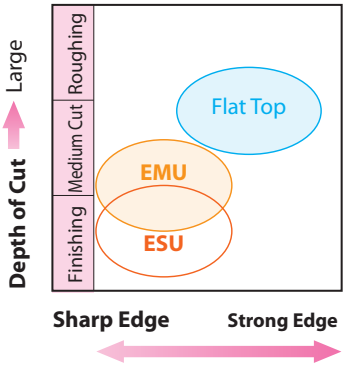
Negative





Positive





■ Recommended Cutting Conditions

(Red text indicates first recommendations.)

Work Material	Cutting Process	Grades	Cutting Conditions Min. - Optimum - Max.		
			ap (in.) Depth of Cut	f (IPR) Feed Rate	vc (SFM) Cutting Speed
Gray Cast Iron (ASTM A48, etc)	Continuous to General	AC4010K	.0197 - **.0787** - .236	.0039 - **.0098** - .0157	650 - **1,300** - 2300
	Interrupted	AC4015K	.0197 - **.0787** - .236	.0039 - **.0118** - .0197	600 - **1,000** - 1,450
	Heavy Interrupted	AC420K	.0197 - **.0787** - .236	.0039 - **.0118** - .0236	500 - **650** - 1,000
Ductile Cast Iron (ASTM A536, etc)	Continuous	AC4010K	.0197 - **.0787** - .236	.0039 - **.0098** - .0157	600 - **1,000** - 1,450
	General to Interrupted	AC4015K	.0197 - **.0787** - .236	.0039 - **.0118** - .0197	525 - **820** - 1,300
	Heavy Interrupted	AC420K	.0197 - **.0787** - .236	.0039 - **.0118** - .0236	400 - **550** - 820
High Strength Ductile Cast Iron (ADI, etc)	Continuous	AC4010K	.0197 - **.0787** - .236	.0039 - **.0098** - .0157	525 - **820** - 1,300
	General to Interrupted	AC4015K	.0197 - **.0787** - .236	.0039 - **.0118** - .0197	450 - **650** - 1,150
	Heavy Interrupted	AC420K	.0197 - **.0787** - .236	.0039 - **.0118** - .0236	260 - **500** - 720

AC4010K \ AC4015K Availability - Negative Inserts

CNMA 80° Diamond/Negative

Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
CNMA431	●	●	.500	.1875	.0156	.2031
CNMA432	●	●	.500	.1875	.0313	.2031
CNMA433	●	●	.500	.1875	.0469	.2031
CNMA434	●	●	.500	.1875	.0625	.2031
CNMA543	●	●	.625	.250	.0469	.250
CNMA544	●	●	.625	.250	.0625	.250
CNMA643	●	●	.750	.250	.0469	.3126
CNMA644	●	★	.750	.250	.0625	.3126

CNMG 80° Diamond/Negative

Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
CNMG431EGU	●	★	.500	.1875	.0156	.2031
CNMG432EGU	●	●	.500	.1875	.0313	.2031
CNMG433EGU	●	●	.500	.1875	.0469	.2031
CNMG434EGU	●	★	.500	.1875	.0625	.2031
CNMG542EGU	●	●	.625	.250	.0313	.250
CNMG543EGU	●	●	.625	.250	.0469	.250
CNMG544EGU	●	●	.625	.250	.0625	.250
CNMG432EGUW	●	●	.500	.1875	.0313	.2031
CNMG433EGUW	●	●	.500	.1875	.0469	.2031
CNMG431EGZ	●	●	.500	.1875	.0156	.2031
CNMG432EGZ	●	●	.500	.1875	.0313	.2031
CNMG433EGZ	●	●	.500	.1875	.0469	.2031
CNMG434EGZ	★	●	.500	.1875	.0625	.2031
CNMG543EGZ	●	●	.625	.250	.0469	.250
CNMG544EGZ	★	●	.625	.250	.0625	.250
CNMG643EGZ	●	●	.750	.250	.0469	.3126
CNMG644EGZ	★	★	.750	.250	.0625	.3126
CNMG432EME	●	●	.500	.1875	.0313	.2031
CNMG433EME	●	●	.500	.1875	.0469	.2031
CNMG434EME	●	★	.500	.1875	.0625	.2031
CNMG542EME	●	●	.625	.250	.0313	.250
CNMG543EME	●	●	.625	.250	.0469	.250
CNMG544EME	●	●	.625	.250	.0625	.250
CNMG643EME	●	●	.750	.250	.0469	.3126
CNMG644EME	●	●	.750	.250	.0625	.3126
CNMG646EME	★	●	.750	.250	.0938	.3126
CNMG866EME	●	●	1.00	.375	.0938	.3622
CNMG432EMU	★	★	.500	.1875	.0313	.2031
CNMG433EMU	★		.500	.1875	.0469	.2031
CNMG432ENZ	●	●	.500	.1875	.0313	.2031
CNMG433ENZ	●	●	.500	.1875	.0469	.2031
CNMG543ENZ	●	●	.625	.250	.0469	.250
CNMG544ENZ	★	●	.625	.250	.0625	.250
CNMG643ENZ	★	●	.750	.250	.0469	.3126
CNMG644ENZ	●	●	.750	.250	.0625	.3126

DNMA 55° Diamond/Negative

Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
DNMA432	●	●	.500	.1875	.0313	.2031
DNMA433	●	●	.500	.1875	.0469	.2031

DNMG 55° Diamond/Negative

Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
DNMG331EGU	●	●	.375	.1875	.0156	.150
DNMG332EGU	●	●	.375	.1875	.0313	.150
DNMG333EGU	★	★	.375	.1875	.0469	.150
DNMG431EGU	●	★	.500	.1875	.0156	.2031
DNMG432EGU	●	●	.500	.1875	.0313	.2031
DNMG433EGU	●	★	.500	.1875	.0469	.2031
DNMG434EGU	●	★	.500	.1875	.0625	.2031
DNMG332EGZ	●	●	.375	.1875	.0313	.150
DNMG431EGZ	●	●	.500	.1875	.0156	.2031
DNMG432EGZ	●	●	.500	.1875	.0313	.2031
DNMG433EGZ	●	●	.500	.1875	.0469	.2031
DNMG432EME	●	●	.500	.1875	.0313	.2031
DNMG433EME	●	●	.500	.1875	.0469	.2031
DNMG434EME	●	★	.500	.1875	.0625	.2031
DNMG431ENZ	●		.500	.1875	.0156	.2031
DNMG432ENZ	●	●	.500	.1875	.0313	.2031
DNMG433ENZ	●	★	.500	.1875	.0469	.2031

RNMA Round Type

Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
RNMA43	●	●	.500	.1875	-	.2031

SNMA 90° Square/Negative

Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
SNMA322	●	●	.375	.125	.0313	.150
SNMA431	★	★	.500	.1875	.0156	.2031
SNMA432	●	●	.500	.1875	.0313	.2031
SNMA433	●	●	.500	.1875	.0469	.2031
SNMA434	★	●	.500	.1875	.0625	.2031
SNMA435	★		.500	.1875	.0781	.2031
SNMA543	★	●	.625	.250	.0469	.250
SNMA544	★		.625	.250	.0625	.250
SNMA643	★	●	.750	.250	.0469	.3126
SNMA644	●	●	.750	.250	.0625	.3126

SNMG 90° Square/Negative

Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
SNMG321EGU	★	★	.375	.125	.0156	.150
SNMG322EGU	★	★	.375	.125	.0313	.150
SNMG431EGU	●	★	.500	.1875	.0156	.2031
SNMG432EGU	●	●	.500	.1875	.0313	.2031
SNMG433EGU	●	●	.500	.1875	.0469	.2031
SNMG434EGU	●	●	.500	.1875	.0625	.2031
SNMG542EGU	●	●	.625	.250	.0313	.250
SNMG543EGU	●	●	.625	.250	.0469	.250
SNMG544EGU	●	●	.625	.250	.0625	.250
SNMG432EGZ	●	●	.500	.1875	.0313	.2031
SNMG433EGZ	●	●	.500	.1875	.0469	.2031
SNMG543EGZ	●		.625	.250	.0469	.250
SNMG643EGZ	★	★	.750	.250	.0469	.3126
SNMG644EGZ	★		.750	.250	.0625	.3126
SNMG432EME	●	●	.500	.1875	.0313	.2031
SNMG433EME	●	●	.500	.1875	.0469	.2031
SNMG434EME	●	●	.500	.1875	.0625	.2031
SNMG542EME	●	●	.625	.250	.0313	.250
SNMG543EME	●	●	.625	.250	.0469	.250
SNMG544EME	●	●	.625	.250	.0625	.250
SNMG643EME	●	●	.750	.250	.0469	.3126
SNMG644EME	●	●	.750	.250	.0625	.3126
SNMG646EME	●	●	.750	.250	.0938	.3126
SNMG866EME	●	●	1.00	.375	.0938	.3622
SNMG432ENZ	●	●	.500	.1875	.0313	.2031
SNMG433ENZ	★	●	.500	.1875	.0469	.2031
SNMG543ENZ	●	●	.625	.250	.0469	.250
SNMG643ENZ	★	★	.750	.250	.0469	.3126
SNMG644ENZ	★	●	.750	.250	.0625	.3126

TNMA Triangle/Negative

Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
TNMA322	★	●	.375	.125	.0313	.150
TNMA331	★	★	.375	.1875	.0156	.150
TNMA332	●	●	.375	.1875	.0313	.150
TNMA333	●	★	.375	.1875	.0469	.150
TNMA334	★	★	.375	.1875	.0625	.150
TNMA432	★	●	.500	.1875	.0313	.2031
TNMA433	●	●	.500	.1875	.0469	.2031
TNMA434	●	★	.500	.1875	.0625	.2031
TNMA543	●	★	.625	.250	.0469	.250
TNMA544	●		.625	.250	.0625	.250

●= USA Stocked item

★= World Wide Warehouse Item

TNMG Triangle/Negative

Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
TNMG331EGU	●	●	.375	.1875	.0156	.150
TNMG332EGU	●	●	.375	.1875	.0313	.150
TNMG333EGU	●	★	.375	.1875	.0469	.150
TNMG334EGU	●	★	.375	.1875	.0625	.150
TNMG431EGU	●	●	.500	.1875	.0156	.2031
TNMG432EGU	●	●	.500	.1875	.0313	.2031
TNMG433EGU	●	●	.500	.1875	.0469	.2031
TNMG331EGZ	●	★	.375	.1875	.0156	.150
TNMG332EGZ	●	●	.375	.1875	.0313	.150
TNMG333EGZ	★	●	.375	.1875	.0469	.150
TNMG432EGZ	●	●	.500	.1875	.0313	.2031
TNMG433EGZ	●	●	.500	.1875	.0469	.2031
TNMG332EME	●	●	.375	.1875	.0313	.150
TNMG333EME	●	★	.375	.1875	.0469	.150
TNMG432EME	●	●	.500	.1875	.0313	.2031
TNMG433EME	●	●	.500	.1875	.0469	.2031
TNMG434EME	●	●	.500	.1875	.0625	.2031
TNMG332ENZ	★	●	.375	.1875	.0313	.150
TNMG333ENZ	★	●	.375	.1875	.0469	.150
TNMG432ENZ	●	●	.500	.1875	.0313	.2031
TNMG433ENZ	★	★	.500	.1875	.0469	.2031
TNMG666ENZ	●		.750	.375	.0938	.3126

VNMA 35° Diamond/Negative

Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
VNMA331	★	●	.375	.1875	.0156	.150
VNMA332	●	●	.375	.1875	.0313	.150
VNMA333	●	★	.375	.1875	.0469	.150

VNMG 35° Diamond/Negative

Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
VNMG331EGU	●	●	.375	.1875	.0156	.150
VNMG332EGU	●	●	.375	.1875	.0313	.150
VNMG333EGU	★	★	.375	.1875	.0469	.150
VNMG331EGZ	●	★	.375	.1875	.0156	.150
VNMG332EGZ	●	●	.375	.1875	.0313	.150
VNMG331ENZ	●	★	.375	.1875	.0156	.150
VNMG332ENZ	●	●	.375	.1875	.0313	.150

WNMA Trigon/Negative

Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
WNMA432	●	●	.500	.1875	.0313	.2031
WNMA433	●	●	.500	.1875	.0469	.2031
WNMA434	★	★	.500	.1875	.0625	.2031

WNMG Trigon/Negative

Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
WNMG331EGU	●	●	.375	.1875	.0156	.150
WNMG332EGU	●	●	.375	.1875	.0313	.150
WNMG333EGU	★	★	.375	.1875	.0469	.150
WNMG431EGU	●	●	.500	.1875	.0156	.2031
WNMG432EGU	●	●	.500	.1875	.0313	.2031
WNMG433EGU	●	●	.500	.1875	.0469	.2031
WNMG432EGUW	●	●	.500	.1875	.0313	.2031
WNMG433EGUW	●	●	.500	.1875	.0469	.2031
WNMG332EGZ	●	●	.375	.1875	.0313	.150
WNMG333EGZ	★	★	.375	.1875	.0469	.150
WNMG431EGZ	●	●	.500	.1875	.0156	.2031
WNMG432EGZ	●	●	.500	.1875	.0313	.2031
WNMG433EGZ	●	●	.500	.1875	.0469	.2031
WNMG332EME	●	●	.375	.1875	.0313	.150
WNMG333EME	●	★	.375	.1875	.0469	.150
WNMG432EME	●	●	.500	.1875	.0313	.2031
WNMG433EME	●	●	.500	.1875	.0469	.2031
WNMG434EME	●	●	.500	.1875	.0625	.2031
WNMG431ENZ	★	★	.500	.1875	.0156	.2031
WNMG432ENZ	●	●	.500	.1875	.0313	.2031

AC4010K \ AC4015K Availability - Positive Inserts

CCMA 80° Diamond/ 7° Relief Angle						
Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
CCMA21.51	●		.250	.094	.0156	.110
CCMA32.51	●	●	.375	.156	.0156	.1732
CCMA32.52	●	●	.375	.156	.0313	.1732
CCMT 80° Diamond/ 7° Relief Angle						
CCMT32.51EMU	●	★	.375	.156	.0156	.1732
CCMT32.52EMU	●	●	.375	.156	.0313	.1732
CCMT21.51ESU	●	●	.250	.094	.0156	.110
CCMT21.52ESU	●	●	.250	.094	.0313	.110
CCMT32.51ESU	●	●	.375	.156	.0156	.1732
CCMT32.52ESU	●	●	.375	.156	.0313	.1732
CCMT431ESU	●	●	.500	.1875	.0156	.2165
CCMT432ESU	●	●	.500	.1875	.0313	.2165
CCMT32.51ELUW	★	●	.375	.156	.0156	.1732
CCMT32.52ELUW	●	●	.375	.156	.0313	.1732
CPMA 80° Diamond/11° Relief Angle						
CPMA321	★	★	.375	.125	.0156	.1732
CPMA322	★	★	.375	.125	.0313	.1732
CPMT 80° Diamond/11° Relief Angle						
CPMT2.51.51EMU	★	★	.3125	.094	.0156	.134
CPMT321EMU	★	★	.375	.125	.0156	.1732
CPMT322EMU	★	★	.375	.125	.0313	.1732

●= USA Stocked item ★= World Wide Warehouse Item

DCMA 55° Diamond/ 7° Relief Angle						
Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
DCMA21.51	★	★	.250	.094	.0156	.110
DCMA21.52	★	★	.250	.094	.0313	.110
DCMA32.51	●	★	.375	.156	.0156	.1732
DCMA32.52	★	●	.375	.156	.0313	.1732
DCMT 55° Diamond/ 7° Relief Angle						
DCMT32.51EMU	●	●	.375	.156	.0156	.1732
DCMT32.52EMU	★	●	.375	.156	.0313	.1732
DCMT21.51ESU	●	●	.250	.094	.0156	.110
DCMT21.52ESU	●	●	.250	.094	.0313	.110
DCMT32.51ESU	●	●	.375	.156	.0156	.1732
DCMT32.52ESU	●	●	.375	.156	.0313	.1732
RCMX Round Type/ 7° Relief Angle						
RCMX100300	●	●	.394	.125	-	.1417
RCMX120400	●	●	.472	.1875		.1654
RCMX160600	●	●	.630	.250		.2047
SCMT 90° Square/ 7° Relief Angle						
SCMT32.52EMU	★	★	.375	.156	.0313	.1732
SCMT432EMU	●	●	.500	.1875	.0313	.2165
SPMN 90° Square/ 11° Relief Angle						
SPMN321	●	★	.375	.125	.0156	-
SPMN322	★	★	.375	.125	.0313	
SPMN421	●	★	.500	.125	.0156	
SPMN422	★	●	.500	.125	.0313	

TCMA Triangle/ 7° Relief Angle						
Sumitomo Catalog Number	AC4010K	AC4015K	Inscribed Circle	Thickness	Nose Radius	Insert Hole Diameter
TCMA21.51	★	●	.250	.094	.0156	.110
TCMA21.52	★	★	.250	.094	.0313	.110
TCMA32.51	●	★	.375	.156	.0156	.1693
TCMA32.52	★	●	.375	.156	.0313	.1693
TCMT Triangle/ 7° Relief Angle						
TCMT21.51ESU	●	●	.250	.094	.0156	.110
TCMT21.52ESU	●	●	.250	.094	.0313	.110
TCMT32.51ESU	●	●	.375	.156	.0156	.1693
TCMT32.52ESU	●	●	.375	.156	.0313	.1693
TPMN Triangle/ 11° Relief Angle						
TPMN221	★	★	.250	.125	.0156	-
TPMN222	★	★	.250	.125	.0313	
TPMN321	★	★	.375	.125	.0156	
TPMN322	★	★	.375	.125	.0313	
TPMN332	★	★	.375	.1875	.0313	
TPMT Triangle/ 11° Relief Angle						
TPMT221EMU	★	★	.250	.125	.0156	.130
TPMT222EMU	★	★	.250	.125	.0313	.130
TPMT331EMU	★	★	.375	.1875	.0156	.1693
TPMT332EMU	★	★	.375	.1875	.0313	.1693
VBMA 35° Diamond/ 5° Relief Angle						
VBMA331	★	★	.375	.1875	.0156	.1732
VBMA332	★	★	.375	.1875	.0313	.1732

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