

NEW PRODUCT NEWS

T-TURN



Improved, New Grades and Chip Breakers for Machining Heat Resistant Super Alloys



KEY POINT

TaeguTec's new grades and chip breakers for heat resistant super alloys (HRSA).

TT3010 and **TT3020** grades.

With a glossy yellow sheen, the PVD coated **TT3010** grade is characterized by high abrasion resistance and high bonding strength due to the use of an ultra-fine substrate. The combination of this abrasion resistant, high bonding strength ultra-fine substrate and a special coated layer enables great chipping resistance which prevents built-up-edges. The new grade is suited for low depths-of-cut finishing applications.

The PVD coated **TT3020** grade, with a glossy yellow sheen, uses an ultra-fine substrate that generates high abrasion resistance and toughness during machining. A smooth coated layer surface made through a special treatment process enables excellent resistance to built-up-edges. For HRSA materials, it is TaeguTec's most recommended grade for the machining of scaled surfaces and light external applications in the low to medium speed range.

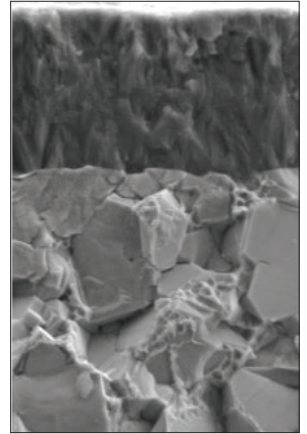
MGS and **FGS** type chip breakers.

The **MGS** chip breaker is a negative press type insert with a sharp cutting edge that reduces cutting resistance and heat generation during machining. Additionally, the insert's high rake angle generates smooth chip evacuation while the insert's wide top face means better insert seating, which promotes stability during operations.

The **FGS** chip breaker is a positive ground type insert. Its sharp cutting edge generates low cutting resistance while guaranteeing high precision machining. The chip breaker minimizes heat when machining heat resistant super alloys and the small dot located in the corner is effective for chip control. Furthermore, it is possible to finish machining without workpiece deformation even when processing thin workpieces.

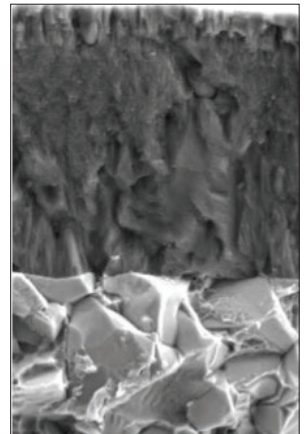
TT3010 grade (PVD coating) features

- High abrasion resistant ultra-fine substrate
- Improved anti-chipping and bonding properties PVD coated layer
- Surface treated smooth coated layer prevents built-up-edges
- Suitable for low depths-of-cut finishing applications
- Glossy yellow sheen

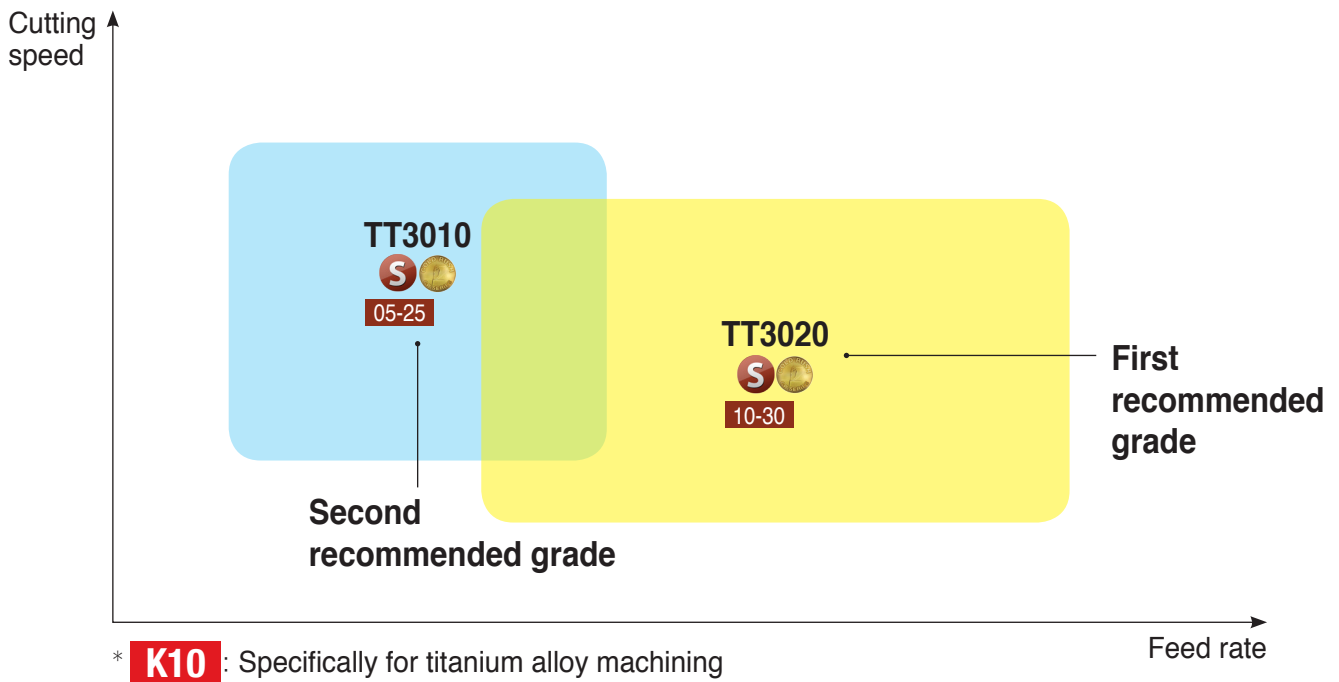


TT3020 grade (PVD coating) features

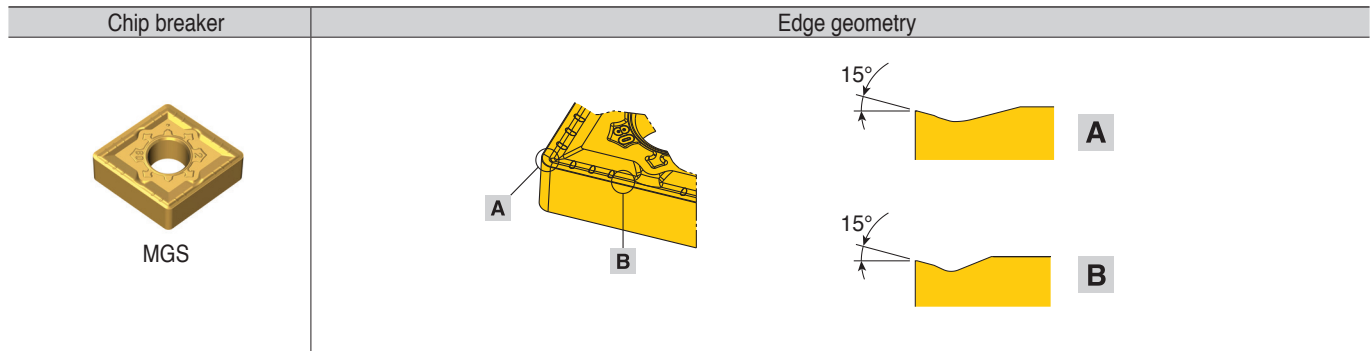
- High abrasion resistant, tough ultra-fine substrate
- Anti-abrasion and cracking resistant PVD coated layer
- Surface treated smooth coated layer prevents built-up-edges
- Suitable for low to medium speed range general purpose applications
- Most recommended grade
- Suitable for scaled surfaces and light external cutting applications
- Glossy yellow sheen



Application range

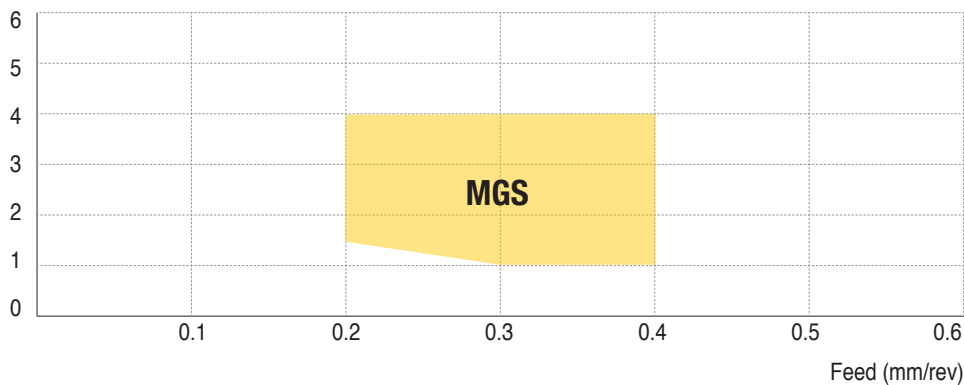


Edge geometry of the MGS chip breaker (negative press type)



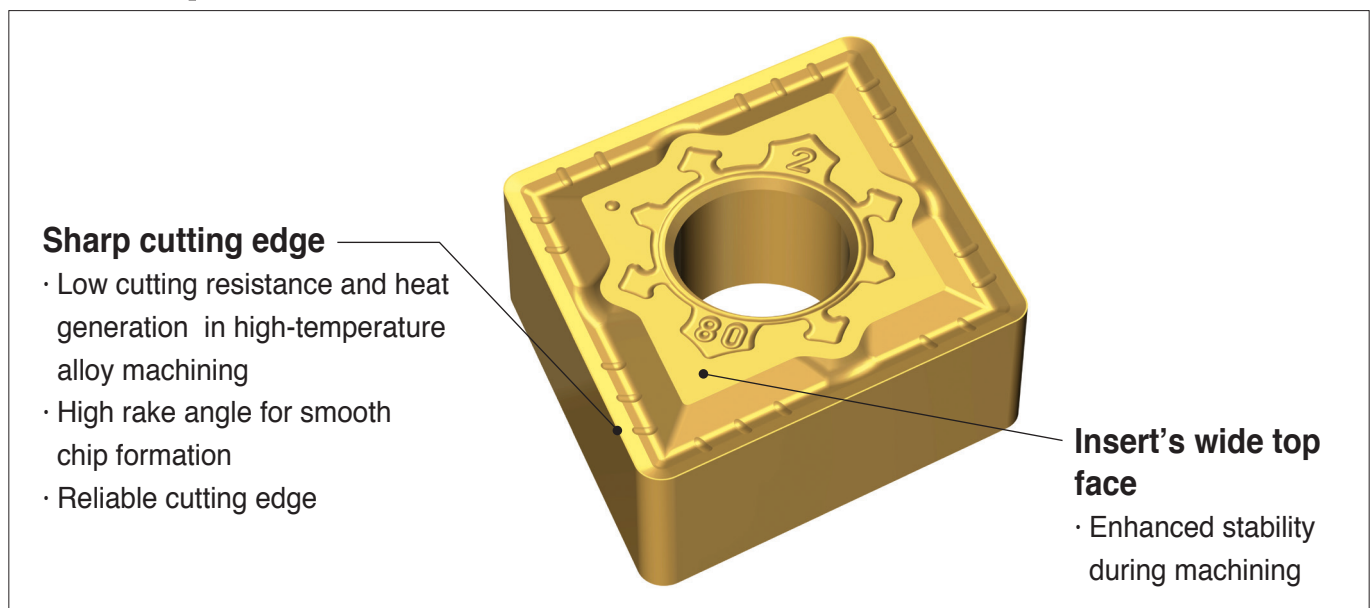
MGS Chip breaker range

Depth of cut (mm)

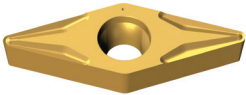
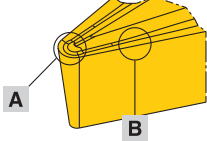
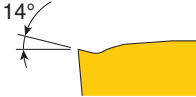



- Insert: CNMG 120408 (432) MGS
- Cutting speed (V): 40 m/min
- Material: Inconel 718 (HB340-360)

MGS Chip breaker features

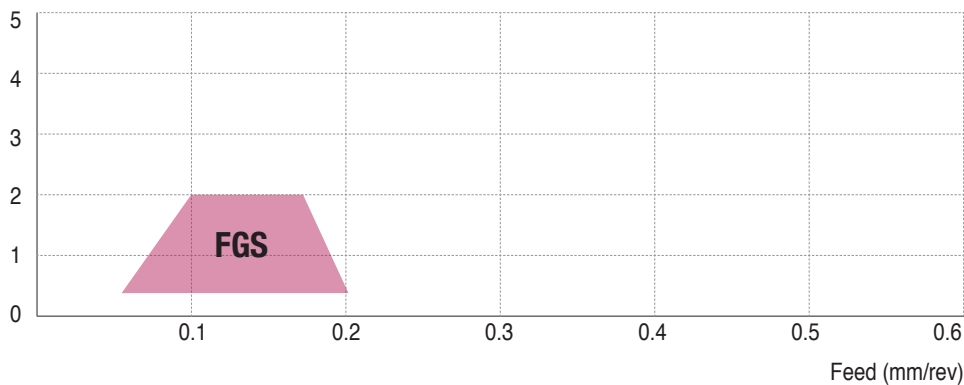


Edge geometry of the FGS chip breaker (positive ground type)

Chip breaker	Edge geometry
 <p>FGS</p>	  <p>A</p>  <p>B</p>

FGS Chip breaker range

Depth of cut (mm)

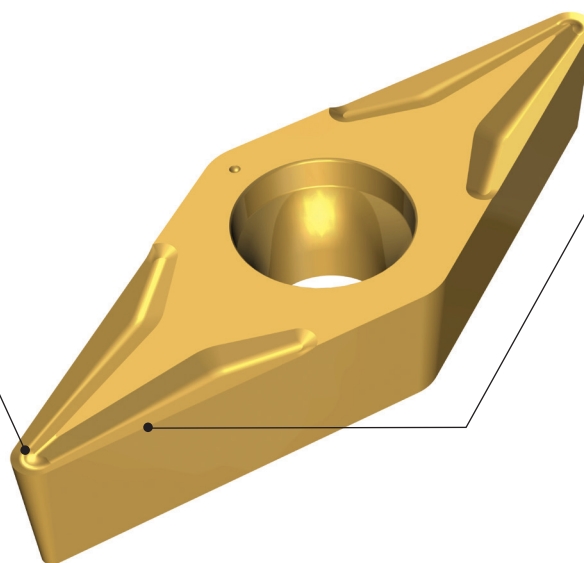


- Insert: VBGT 160408 (332) FGS
- Cutting speed (V): 40 m/min
- Material: Inconel 718 (HB340-360)

FGS Chip breaker features

A small dot (corner)

- Efficient chip control under low depth-of-cut and low feed conditions

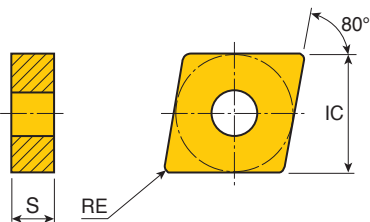


Sharp cutting edge

- Lower cutting resistance and heat generation in heat resistant super alloys machining
- High rake angle for smooth chip formation
- Peripherally fully ground cutting edge for high-precision machining

CNMG

Negative 80° rhombic inserts



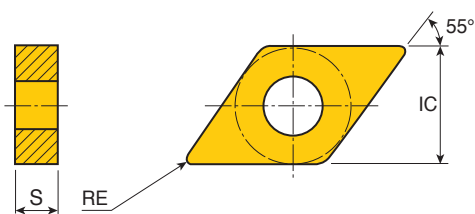
Size	Dimension (mm)		
	IC	S	RE
12	12.7	4.76	0.8-1.2

Insert	Designation	Feed (mm/rev)	ap (mm)	PVD coated		Uncoated
				TT3010	TT3020	K10
	CNMG 120408 MGS	0.15-0.40	1.0-4.0	●	●	●
	120412 MGS	0.17-0.50	1.5-4.0	●	●	●

●: Standard items

DNMG

Negative 55° rhombic inserts



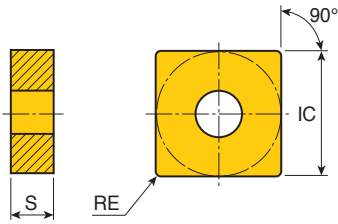
Size	Dimension (mm)		
	IC	S	RE
15	12.7	4.76-6.35	0.8-1.2

Insert	Designation	Feed (mm/rev)	ap (mm)	PVD coated		Uncoated
				TT3010	TT3020	K10
	DNMG 150408 MGS	0.15-0.40	1.0-4.0	●	●	●
	150608 MGS	0.15-0.40	1.0-4.0	●	●	●
	150612 MGS	0.17-0.40	1.0-4.0	●	●	●

●: Standard items

SNMG

Negative square inserts



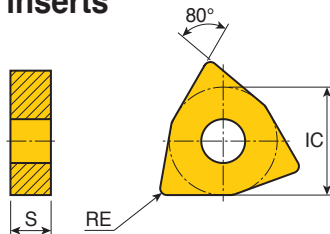
Size	Dimension (mm)		
	IC	S	RE
12	12.7	4.76	0.8-1.2
19	19.05	6.35	1.6

Insert	Designation	Feed (mm/rev)	ap (mm)	PVD coated		Uncoated
				TT3010	TT3020	K10
	SNMG 120408 MGS	0.15-0.40	1.0-4.0	●	●	●
	120412 MGS	0.17-0.40	1.3-4.0	●	●	●
	190616 MGS	0.17-0.60	1.5-8.0	●	●	●

●: Standard items

WNMG

Negative 80 ° trigon inserts



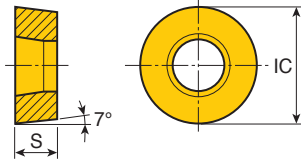
Size	Dimension (mm)		
	IC	S	RE
08	12.7	4.76	0.8-1.2

Insert	Designation	Feed (mm/rev)	ap (mm)	PVD coated		Uncoated
				TT3010	TT3020	K10
	WNMG 080408 MGS	0.15-0.40	1.0-4.0	●	●	●
	080412 MGS	0.17-0.40	1.3-4.0	●	●	●


●: Standard items

RCMT

Positive 7° clearance round inserts



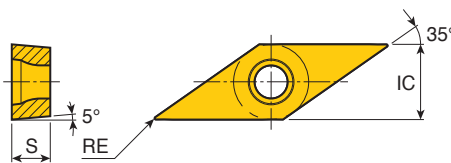
Size	Dimension (mm)	
	IC	S
08	8	3.18
12	12	4.76

Insert	Designation	Feed (mm/rev)	ap (mm)	PVD coated		Uncoated
				TT3010	TT3020	K10
	RCMT 080300 MGS	0.12-0.35	0.5-3.0	●	●	●
	120400 MGS	0.20-0.50	2.0-5.0	●	●	●

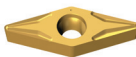
●: Standard items

VBGT

Positive 5° clearance 35° rhombic inserts



Size	Dimension (mm)		
	IC	S	RE
16	9.52	4.76	0.4-1.2

Insert	Designation	Feed (mm/rev)	ap (mm)	PVD coated		Uncoated
				TT3010	TT3020	K10
	VBGT 160404 FGS	0.03-0.20	0.2-2.5	●	●	●
	160408 FGS	0.05-0.20	0.3-2.5	●	●	●
	160412 FGS	0.07-0.20	0.3-2.5	●	●	●

●: Standard items

Recommended Cutting Conditions

ISO	Material	Condition	Tensile strength (N/mm ²)	Hardness HB	Material No.	Cutting speed Vc(m/min)					
						Coated					
						K10	TT5080	TT3010	TT3020	TT9080	
P	Non-alloy steel, cast steel, free cutting steel	< 0.25%C Annealed	420	125	1						
		≥ 0.25%C Annealed	650	190	2						
		< 0.55%C Quenched and tempered	850	250	3						
		≥ 0.55%C Annealed	750	220	4						
		Quenched and tempered	1000	300	5						
	Low alloy steel and cast steel (less than 5% of alloying elements)	Annealed		600	200	6					
				930	275	7					
		Quenched and tempered		1000	300	8					
				1200	350	9					
	High alloy steel, cast steel and tool steel	Annealed		680	200	10					
		Quenched and tempered		1100	325	11					
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12						
		Martensitic	820	240	13						
		Austenitic	600	180	14						
K	Gray cast iron (GG)	Ferritic		160	15						
		Pearlitic		250	16						
	Cast iron nodular (GGG)	Ferritic		180	17						
		Pearlitic		260	18						
	Malleable cast iron	Ferritic		130	19						
		Pearlitic		230	20						
N	Aluminum - wrought alloy	Not cureable		60	21						
		Cured		100	22						
	Aluminum-cast, alloyed	≤12% Si Not cureable		75	23						
		Cured		90	24						
	Copper alloys	>12% Si High temp.		130	25						
		>1% Pb Free cutting	Brass		90	27					
			Electrolitic copper		100	28					
		Non-metallic	Duroplastics, fiber plastics			29					
	Hard rubber				30						
	S	High temp. alloys	Fe based	Annealed		200	31	55-85	50-180	50-170	40-165
Cured					280	32	40-65	40-160	40-150	30-145	30-130
Ni or Co based			Annealed		250	33	32-55	45-100	45-90	35-85	35-80
			Cured		350	34	21-40	35-90	35-80	30-75	30-70
Titanium, Ti alloys		Cast		320	35	16-26	30-80	30-70	30-65	30-60	
			Rm 400		36	50-75	110-200	110-190	100-185	90-180	
		Alpha+beta alloys cured	Rm 1050		37	45-70	50-100	50-90	40-85	40-80	
H	Hardened steel	Hardened		55HRC	38						
		Hardened		60HRC	39						
	Chilled cast iron	Cast		400	40						
	Cast iron nodular	Hardened		55HRC	41						

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel