Member IMC Group Tungaloy

TurnLine

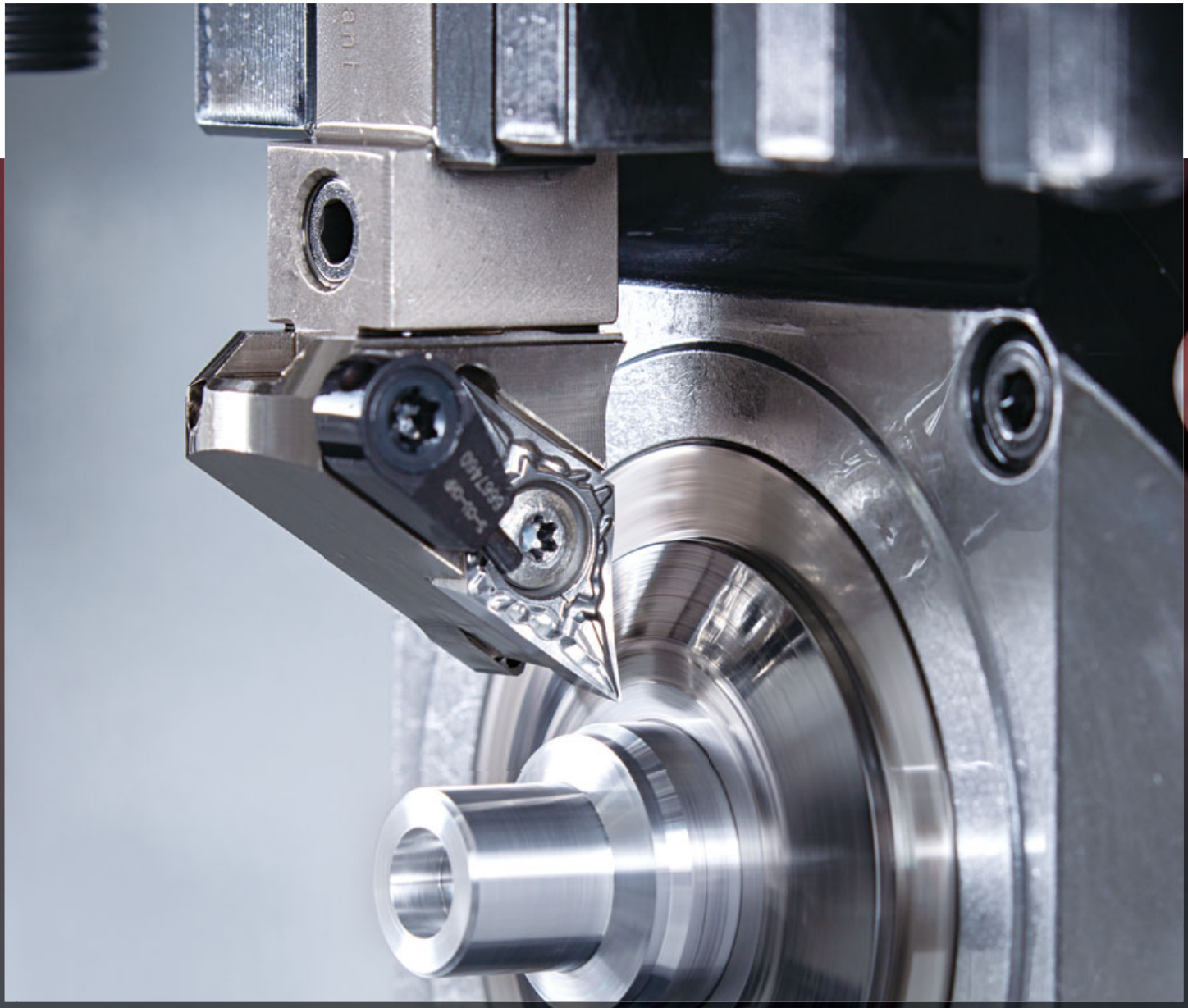
For more information

Turning tool

Non-Ferrous Application Series

Tungaloy Report No. 555S4-G

Expansion of **JS, JP chipbreaker insert with KS05F grade for non-ferrous alloy machining**



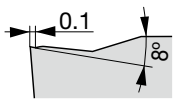
TUNGALOY ADDFORCE ACCELERATED LINES

Non-Ferrous Application Series

High precision G-class 3D chipbreaker

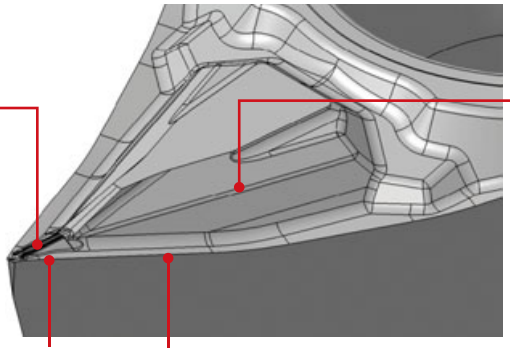
Provides excellent chip control and superior surface finishing in non-ferrous materials

JP First choice chipbreaker for high precision finishing



Eliminates chip nesting and other chip-associated issues that impede the shop's productivity and provides stable chip breaking over a wide range of feed rates and D.O.C.

- Effective chip breaking for high part quality
- Versatile geometry designed for a broad application range
- Eliminates burr generation and controls vibration during large depth of cut



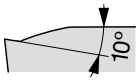
A protrusion extending towards the nose radius
Provides excellent chip control in finish to precision finish cutting

Secondary rake with multiple facets
Guides and redirects chips generated during machining at large depth of cut

Cutting edge with a steep inclination angle
- For better chip evacuation
- For reduced cutting force

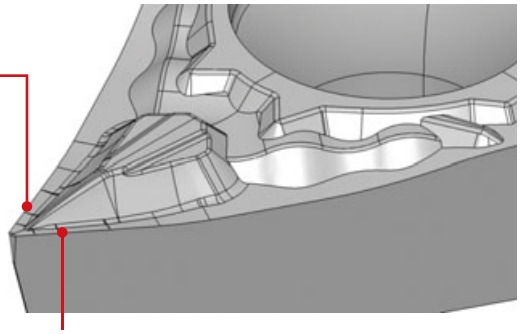
Primary rake with variable angles
Controls the generation of burrs and vibration when machining at a large depth of cut capability

JS First choice chipbreaker for finish cutting



Chipbreaker geometry that allows light cutting action and excellent chip breaking

- A steep cutting edge inclination angle for better chip control and reduced cutting force
- A unique protrusion that extends towards the radius effectively controls chip flow from small to large depth of cut



Cutting edge with a steep inclination angle
Provides good chip evacuation and reduced cutting force

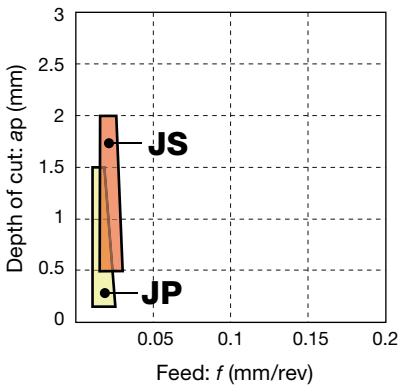
Rake with variable angles and steep protrusion
Provides stable chip control in the small to large depth of cut range and also maintains cutting edge integrity and sharpness over extended period of time

KS05F

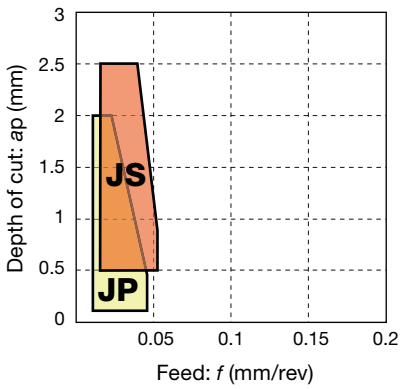
- Sub-micron grain cemented carbide with balanced wear and impact resistance
- Homogeneous fine-grained structure provides excellent resistance to wear, fracture, and built-up edge
- The rake face features a mirror finish that provides the cutting edge with built-up edge resistance

■ Chip control range

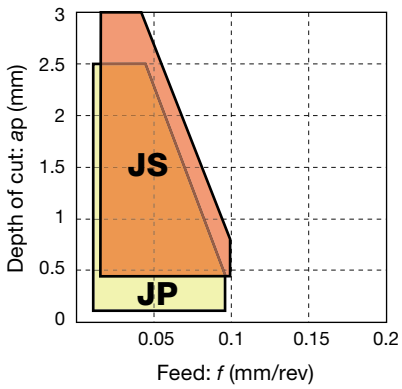
RE < 0.05 mm



RE < 0.1 mm

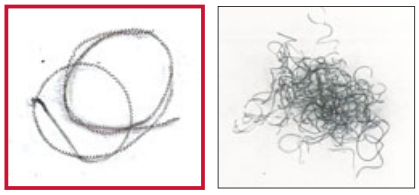


RE < 0.2 mm



■ Chip control

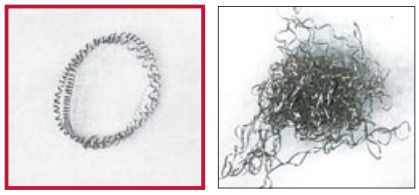
JP | Competitor



N

Insert : DCGT11T0302MF-JP KS05F
Workpiece material: A6061 / AlMg1SiCu
Cutting speed : *Vc* = 300 m/min
Feed : *f* = 0.025 mm/rev
Depth of cut : *ap* = 0.1 mm
Coolant : Wet

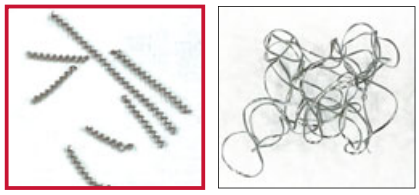
JP | Competitor



N

Insert : DCGT11T302MF-JP KS05F
Workpiece material: A5052
Cutting speed : *Vc* = 300 m/min
Feed : *f* = 0.05 mm/rev
Depth of cut : *ap* = 0.25 mm
Coolant : Wet

JS | Competitor



N

Insert : DCGT11T0304MF-JS KS05F
Workpiece material: A6061 / AlMg1SiCu
Cutting speed : *Vc* = 300 m/min
Feed : *f* = 0.15 mm/rev
Depth of cut : *ap* = 1 mm
Coolant : Wet

Non-Ferrous Application Series

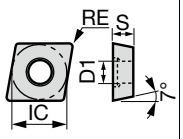
Insert POSITIVE TYPE

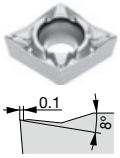
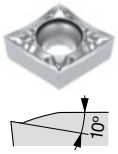
● : Continuous cutting
◐ : Light interrupted cutting
✠ : Heavy interrupted cutting

CC

Rhombic, 80° with hole Positive 7°

P	Steel	
M	Stainless	
K	Cast iron	●
N	Non-ferrous	●
S	Superalloy	●
H	Hard material	

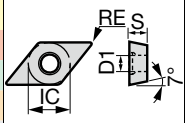


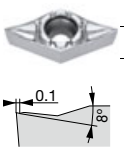
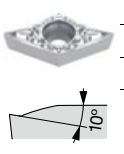
Application	Chipbreaker	Designation	Uncoated KS05F	Dimension (mm) RE	IC	S	D1
Precision finishing (sharp edge)	JP	CCGT09T300MF-JP	●	<0.05	9.525	3.97	4.4
		CCGT09T301MF-JP	●	<0.1	9.525	3.97	4.4
		CCGT09T302MF-JP	●	<0.2	9.525	3.97	4.4
Finishing (sharp edge)	JS	CCGT09T300MF-JS	●	<0.05	9.525	3.97	4.4
		CCGT09T301MF-JS	●	<0.1	9.525	3.97	4.4
		CCGT09T302MF-JS	●	<0.2	9.525	3.97	4.4
		CCGT09T304MF-JS	●	<0.4	9.525	3.97	4.4

DC

Rhombic, 55° with hole Positive 7°

P	Steel	
M	Stainless	
K	Cast iron	●
N	Non-ferrous	●
S	Superalloy	●
H	Hard material	



Application	Chipbreaker	Designation	Uncoated KS05F	Dimension (mm) RE	IC	S	D1
Precision finishing (sharp edge)	JP	DCGT11T300MF-JP	●	<0.05	9.525	3.97	4.4
		DCGT11T301MF-JP	●	<0.1	9.525	3.97	4.4
		DCGT11T302MF-JP	●	<0.2	9.525	3.97	4.4
Finishing (sharp edge)	JS	DCGT11T300MF-JS	●	<0.05	9.525	3.97	4.4
		DCGT11T301MF-JS	●	<0.1	9.525	3.97	4.4
		DCGT11T302MF-JS	●	<0.2	9.525	3.97	4.4
		DCGT11T304MF-JS	●	<0.4	9.525	3.97	4.4

Corner radius (RE) with a sign of inequality (<) means minus tolerance.

● : New product

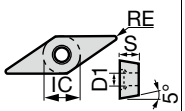
Insert POSITIVE TYPE

● : Continuous cutting
◐ : Light interrupted cutting
✠ : Heavy interrupted cutting

VB

Rhombic, 35° with hole Positive 5°

P	Steel	
M	Stainless	
K	Cast iron	●
N	Non-ferrous	●
S	Superalloy	●
H	Hard material	

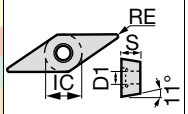


Application	Chipbreaker	Designation	Uncoated KS05F	RE	IC	S	D1
Precision finishing (sharp edge)	JP	VBGT110300MF-JP	●	<0.05	6.35	3.18	2.8
		VBGT110301MF-JP	●	<0.1	6.35	3.18	2.8
		VBGT110302MF-JP	●	<0.2	6.35	3.18	2.8
Finishing (sharp edge)	JS	VBGT110300MF-JS	●	<0.05	6.35	3.18	2.8
		VBGT110301MF-JS	●	<0.1	6.35	3.18	2.8
		VBGT110302MF-JS	●	<0.2	6.35	3.18	2.8
		VBGT110304MF-JS	●	<0.4	6.35	3.18	2.8

VP

35° Rhombic with hole Positive 11°

P	Steel	
M	Stainless	
K	Cast iron	●
N	Non-ferrous	●
S	Superalloy	●
H	Hard material	



Application	Chipbreaker	Designation	Uncoated KS05F	RE	IC	S	D1
Precision finishing (sharp edge)	JP	VPGT110300MF-JP	●	<0.05	6.35	3.18	2.8
		VPGT110301MF-JP	●	<0.1	6.35	3.18	2.8
		VPGT110302MF-JP	●	<0.2	6.35	3.18	2.8
Finishing (sharp edge)	JS	VPGT110300MF-JS	●	<0.05	6.35	3.18	2.8
		VPGT110301MF-JS	●	<0.1	6.35	3.18	2.8
		VPGT110302MF-JS	●	<0.2	6.35	3.18	2.8
		VPGT110304MF-JS	●	<0.4	6.35	3.18	2.8

Corner radius (RE) with a sign of inequality (<) means minus tolerance.

● : New product

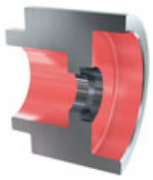
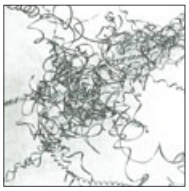
Tolerance

Non-Ferrous Application Series

STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Chipbreaker	Grade	Cutting speed *Vc* (m/min)	Feed: *f* (mm/rev) RE<0.05	RE<0.1	RE<0.2	RE<0.4	Depth of cut *ap* (mm)
N	Aluminium alloys (Si < 12%)	JP	KS05F	100 - 1200	0.02 - 0.03	0.02 - 0.05	0.02 - 0.1	-	0.05 - 2.5
		JS	KS05F	100 - 1200	0.02 - 0.03	0.02 - 0.05	0.02 - 0.1	0.05 - 0.2	0.5 - 3
	Aluminium alloys (Si ≥ 12%)	JP	KS05F	100 - 300	0.02 - 0.03	0.02 - 0.05	0.02 - 0.1	-	0.05 - 2.5
		JS	KS05F	100 - 300	0.02 - 0.03	0.02 - 0.05	0.02 - 0.1	0.05 - 0.2	0.5 - 3
	Copper and copper alloys	JP	KS05F	100 - 300	0.02 - 0.03	0.02 - 0.05	0.02 - 0.1	-	0.05 - 2.5
		JS	KS05F	100 - 300	0.02 - 0.03	0.02 - 0.05	0.02 - 0.1	0.05 - 0.2	0.5 - 3

PRACTICAL EXAMPLES

Workpiece type		Valve parts for the Brake system	Valve parts for the Brake system
Insert		CCGT09T302MF-JS	VBGT110302MF-JP
Grade		KS05F	KS05F
Workpiece material		A6061 / AlMg1SiCu	A6061 / AlMg1SiCu
			
Cutting conditions	Cutting speed : *Vc* (m/min)	196	296
	Feed : *f* (mm/rev)	0.1	0.06
	Depth of cut : *ap* (mm)	0.5	0.25
	Coolant	Wet	Wet
Results		Conventional / **JS chipbreaker**   JS chipbreaker eliminated the formation of long chips and part surface damage caused by poor chip control.	Conventional / **JP chipbreaker**   JP chipbreaker improved productivity by eliminating machine downtime that was caused by the bird nesting of chips.

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