

Coated Grades for Titanium Alloys

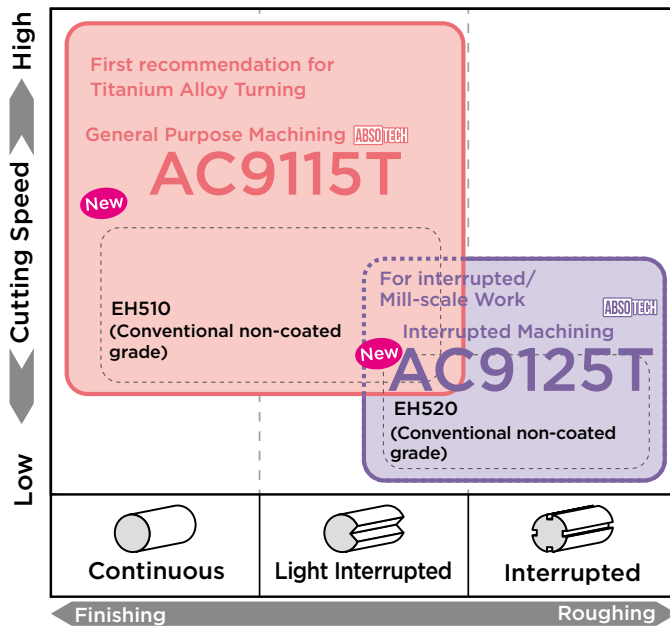
AC9115T/AC9125T

New grades for Titanium Alloys!
 Due to a revolutionary coating technology,
 the new grades enable excellent tool life.



AC9115T/AC9125T

Application Range



AC9115T New PVD ABSOTECH

Absolute Reliability

Wear Resistance **3X** against conventional tools

AC9125T New PVD ABSOTECH

Exceptional Stability

Fracture Resistance **3X** against conventional tools

Features of AC9115T/AC9125T

PVD Coating Technology Absotech®

By adopting the industry's first WC-based composition, it is ideal for titanium alloys. Suppresses chemical reactions and significantly improves wear resistance.

Ti-6Al-4V Friction Coefficient

Load

Sample

Rotate

AC9100T Series

Conventional Coating

75% Reduction in Friction Coefficient

0 0.5 1.0

Friction Coefficient

Test Conditions ▶ Material: Ti-6Al-4V Load: 1N Test Time: 30 Seconds

Very Slight Adhesion

2 mm

AC9100T Series

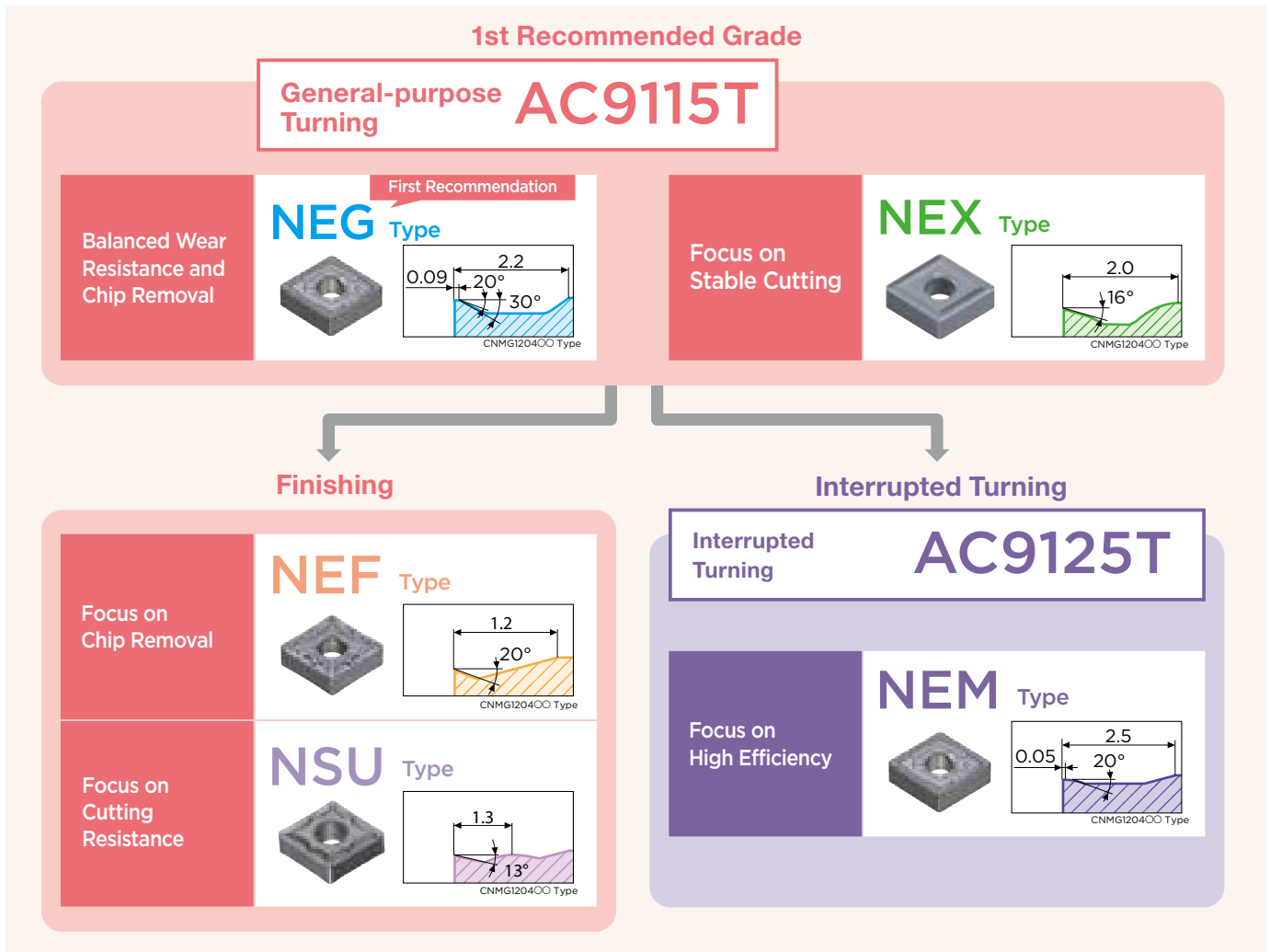
Large Adhesion

2 mm

Conventional Coating

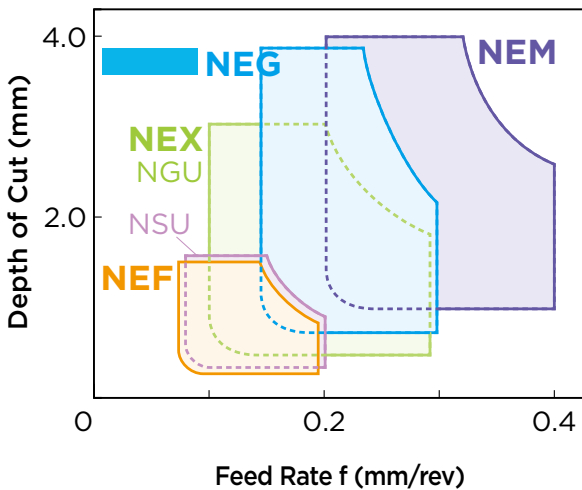
Carbide Substrate

■ Chipbreaker recommendations of AC9115T and AC9125T (Negative Inserts)

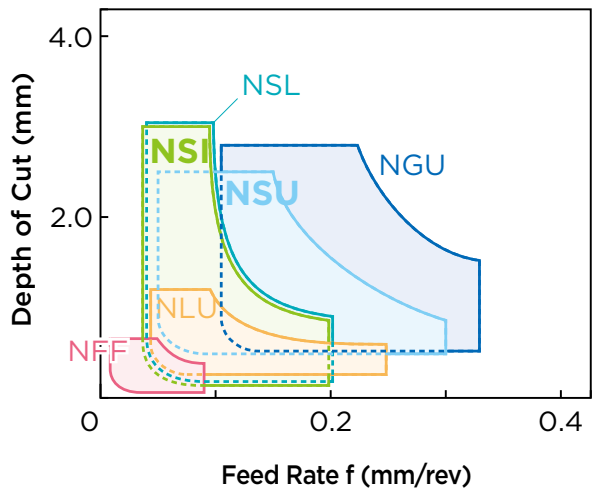


■ Chipbreaker Application Range

Negative




Positive

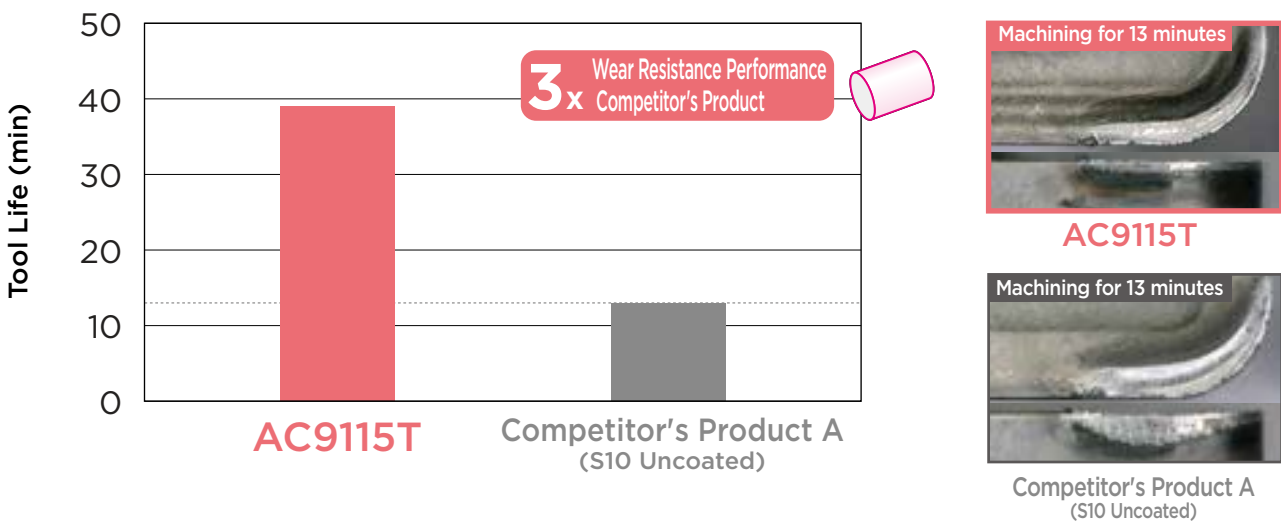


Features of AC9115T/AC9125T

Characteristic Values

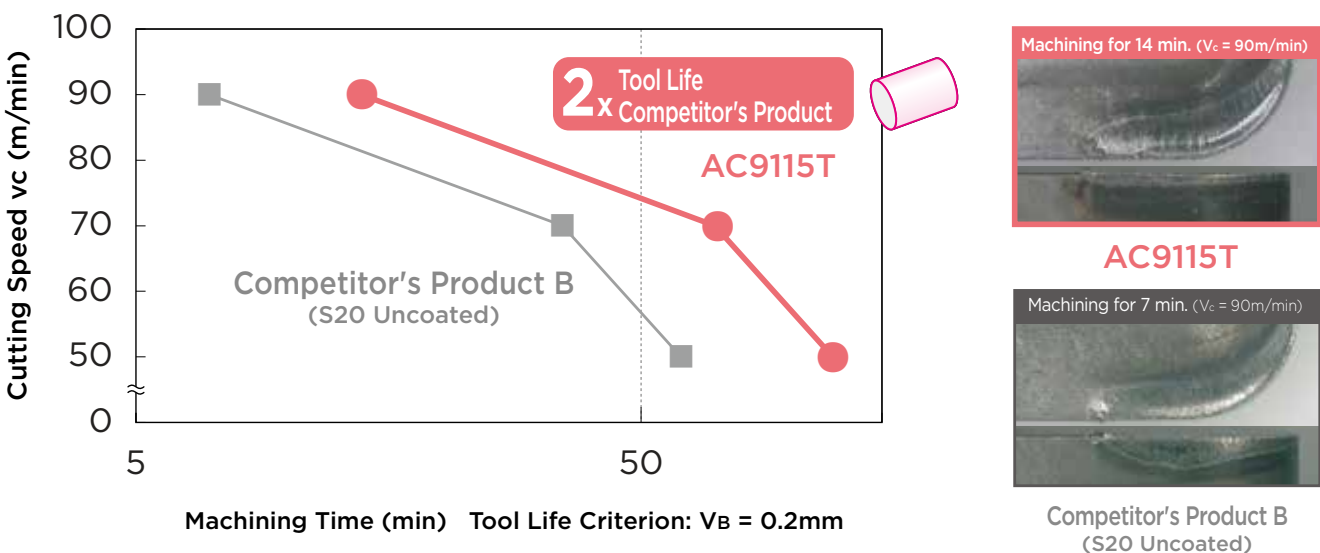
Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features
	AC9115T	92.6	2.6	Absotech	1	<ul style="list-style-type: none"> First recommended grade for titanium alloy machining Coating specialized for machining titanium significantly improves wear resistance
	AC9125T	91.7	3.0	Absotech	1	<ul style="list-style-type: none"> Grade for interrupted machining of titanium alloy Improved stability during interrupted cutting by using a highly tough base material.

Wear Resistance of AC9115T



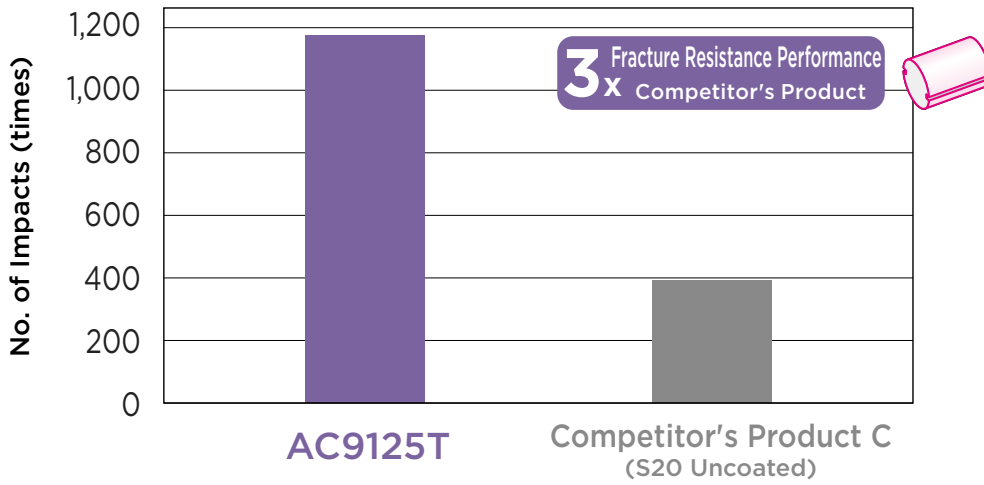
Material: Ti-6Al-4V Insert: CNMG120408 Cutting Conditions: $v_c = 70\text{m/min}$ $f = 0.3\text{mm/rev}$ $a_p = 1.5\text{mm}$ Emulsion

Tool Life (V-T Chart) of AC9115T

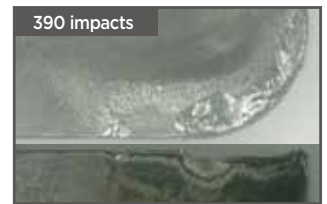


Material: Ti-6Al-4V Insert: CNMG120408 Cutting Conditions: $v_c = 50, 70, 90\text{m/min}$ $f = 0.2\text{mm/rev}$ $a_p = 1.5\text{mm}$ Emulsion (Internal Coolant Supply 7MPa)

■ Fracture Resistance of AC9125T



AC9125T

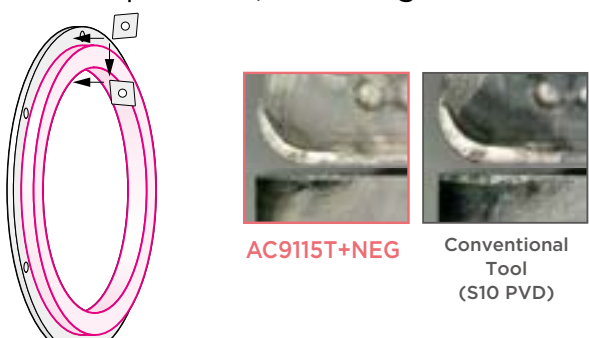
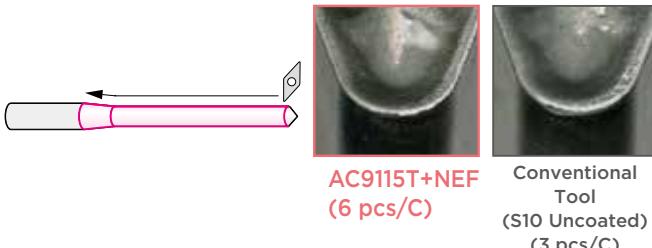


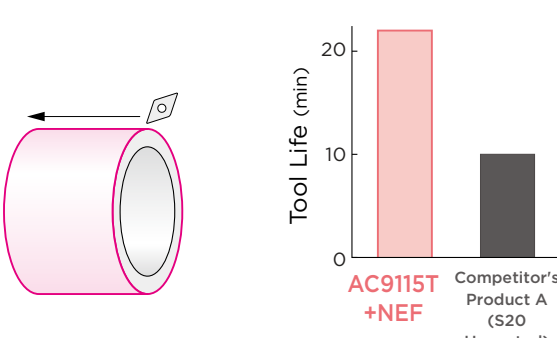
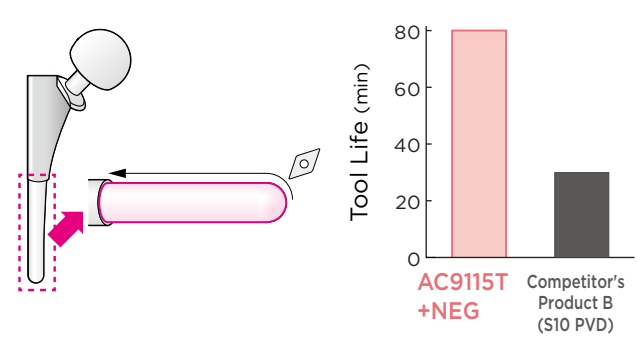
Competitor's Product C (S20 Uncoated)

Material: Ti-6Al-4V 2 Grooves Insert: CNMG120408 Cutting Conditions: $v_c = 40\text{m/min}$ $f = 0.3\text{mm/rev}$ $a_p = 1.5\text{mm}$ Emulsion

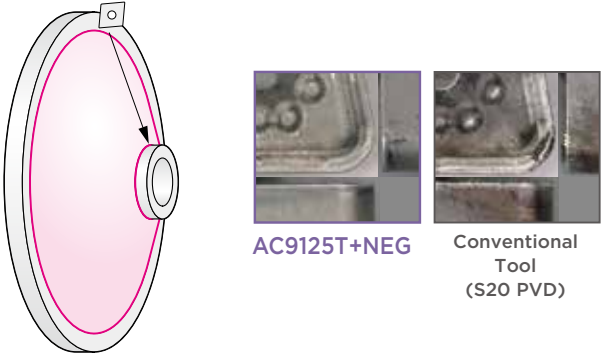
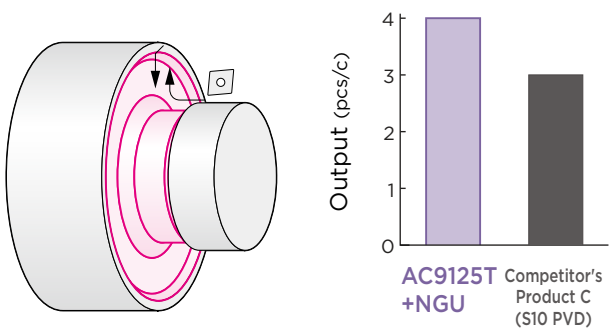
AC9115T/AC9125T

Application Examples of AC9115T

α+β type Alloy (Ti-6Al-4V) Aircraft Parts AC9115T S	β type Alloy (Ti-6Al-4V) Medical Parts AC9115T S
<p>AC9115T reduces flank wear by 60% with the same number of machining operations as conventional products, extending tool life.</p>  <p style="text-align: center;"> AC9115T+NEG Conventional Tool (S10 PVD) </p>	<p>AC9115T: Double the tool life with low wear and less adhesion.</p>  <p style="text-align: center;"> AC9115T+NEF (6 pcs/C) Conventional Tool (S10 Uncoated) (3 pcs/C) </p>
<p>Insert: CNMG120408NEG (AC9115T) Cutting Conditions: Vc = 90m/min f = 0.2mm/rev ap = 1.5mm Emulsion</p>	<p>Insert: VNMG160404NEF (AC9115T) Cutting Conditions: Vc = 30m/min f = 0.1mm/rev ap = 1.5mm Emulsion</p>

α+β type Alloy (Ti-6Al-4V) Aircraft Parts AC9115T S	α+β type Alloy Medical Parts AC9115T S
<p>AC9115T has excellent wear resistance and achieves 2.2 times longer tool life.</p>  <p style="text-align: center;"> AC9115T+NEF Competitor's Product A (S20 Uncoated) </p>	<p>AC9115T has excellent wear resistance and achieves 2.7 times longer tool life.</p>  <p style="text-align: center;"> AC9115T+NEF Competitor's Product B (S10 PVD) </p>
<p>Insert: DNMG150408NEF (AC9115T) Cutting Conditions: Vc = 120m/min f = 0.15mm/rev ap = 0.5mm Emulsion (Internal Coolant Supply High-pressure Coolant)</p>	<p>Insert: DNMG150608NEF (AC9115T) Cutting Conditions: Vc = 50m/min f = 0.3mm/rev ap = 1.8mm Emulsion</p>

■ Application Examples of AC9125T

$\alpha+\beta$ type Alloy (Ti-6Al-4V) Aircraft Parts AC9125T S	$\alpha+\beta$ type Alloy (Ti-6Al-4V) Industrial Machinery Component AC9125T S
<p>AC9125T reduces wear and adhesion, and extends tool life with the same number of processes as conventional products.</p>  <p style="text-align: center;"> AC9125T+NEG Conventional Tool (S20 PVD) </p>	<p>AC9125T has excellent wear resistance and chipping resistance, achieving 1.3 times longer tool life.</p>  <p style="text-align: center;"> AC9125T +NGU Competitor's Product C (S10 PVD) </p>
<p>Insert: CNMG120408NEG (AC9125T) Cutting Conditions: $V_c = 40\text{m/min}$ $f = 0.12\text{mm/rev}$ $a_p = 2.0\text{mm}$ Emulsion</p>	<p>Insert: CNMG120408NGU (AC9125T) Cutting Conditions: $V_c = 50\text{m/min}$ $f = 0.3\text{mm/rev}$ $a_p = 1.8\text{mm}$ Emulsion</p>

AC9115T/AC9125T

◇ Negative 80° Diamond type

Shape	Cat. No.	Stock		Dimensions			
		AC9115T	AC9125T	Inscribed Circle	Thickness	Screw Hole Ø	Nose Radius
	CNMG 120402 NSU	●	●	12.7	4.76	5.16	0.2
	120404 NSU	●	●				0.4
	120408 NSU	●	●				0.8
	120412 NSU	●	●				1.2
	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
	CNMG 190612 NEX	●	●				19.05
	CNMG 120404 NGU	●	●	12.7	4.76	5.16	0.4
	120408 NGU	●	●				0.8
	120412 NGU	●	●				1.2
	CNMG 120404 NEG	●	●	12.7	4.76	5.16	0.4
	120408 NEG	●	●				0.8
	120412 NEG	●	●				1.2
	CNMG 120408 NEM	●	●	12.7	4.76	5.16	0.8
	120412 NEM	●	●				1.2
	CNMG 120404 NUP	●	●	12.7	4.76	5.16	0.4
	120408 NUP	●	●				0.8
	120412 NUP	●	●				1.2
	CNMG 160612 NEG	●	●	15.875	6.35	6.35	1.2
	160616 NEG	●	●				1.6

◇ Negative 55° Diamond type

Shape	Cat. No.	Stock		Dimensions			
		AC9115T	AC9125T	Inscribed Circle	Thickness	Screw Hole Ø	Nose Radius
	DNMG 150402 NSU	●	●	12.7	4.76	5.16	0.2
	150404 NSU	●	●				0.4
	150408 NSU	●	●				0.8
	150412 NSU	●	●				1.2
	DNMG 150404 NEF	●		12.7	4.76	5.16	0.4
	150408 NEF	●					0.8
	DNMG 150608 NEF	●		12.7	6.35	5.16	0.8
	150612 NEF	●					1.2
	DNGG 150404 NEF	●		12.7	4.76	5.16	0.4
	150408 NEF	●					0.8
	DNMG 150404 NEX	●	●	12.7	4.76	5.16	0.4
	150408 NEX	●	●				0.8
	DNMG 150612 NEX	●	●	12.7	6.35	5.16	1.2
	DNMG 150404 NEG	●	●	12.7	4.76	5.16	0.4
	150408 NEG	●	●				0.8
	150608 NEG	●	●				12.7
	DNMG 150408 NEM	●	●	12.7	4.76	5.16	0.8
	150412 NEM	●	●				1.2
	150608 NEM	●	●				12.7

○ Negative 90° Square Type

Shape	Cat. No.	Stock		Dimensions			
		AC9115T	AC9125T	Inscribed Circle	Thickness	Screw Hole Ø	Nose Radius
	SNMG 120412 NEG	●	●	12.7	4.76	5.16	1.2
	150616 NEG	●	●	15.875	6.35	6.35	1.6

△ Negative 60° Triangular Type

Shape	Cat. No.	Stock		Dimensions			
		AC9115T	AC9125T	Inscribed Circle	Thickness	Screw Hole Ø	Nose Radius
	TNMG 160402 NSU	●	●	9.525	4.76	3.81	0.2



◇ Negative 35° Diamond Type

Shape	Cat. No.	Stock		Dimensions			
		AC9115T	AC9125T	Inscribed Circle	Thickness	Screw Hole Ø	Nose Radius
	VNMG 160404 NSU	●	●	9.525	4.76	3.81	0.4
	160408 NSU	●	●				0.8
	VNMG 160404 NEF	●		9.525	4.76	3.81	0.4
	160408 NEF	●					0.8
	VNGG 160402 NEF	●		9.525	4.76	3.81	0.2
	160404 NEF	●					0.4
	VNMG 160404 NEX	●	●	9.525	4.76	3.81	0.4
	160408 NEX	●	●				0.8
	VNMG 160404 NEG	●	●	9.525	4.76	3.81	0.4
	160408 NEG	●	●				0.8







△ Negative 80° Trigon Type

Shape	Cat. No.	Stock		Dimensions			
		AC9115T	AC9125T	Inscribed Circle	Thickness	Screw Hole Ø	Nose Radius
	WNMG 080408 NEF	●	●	12.7	4.76	5.16	0.8
	WNMG 080408 NEX	●	●	12.7	4.76	5.16	0.8
	WNMG 080408 NEG	●	●	12.7	4.76	5.16	0.8
	WNMG 080408 NEM	●	●	12.7	4.76	5.16	0.8


◇ Positive 80° Diamond Type

Shape	Relief Angle	Cat. No.	Stock		Dimensions			
			AC9115T	AC9125T	Inscribed Circle	Thickness	Screw Hole Ø	Nose Radius
	7°	CCMT 09T304 NSU	●	●	9.525	3.97	4.4	0.4
		09T308 NSU	●	●				0.8
	7°	CCGT 09T301 MNSI	●	●	9.525	3.97	4.4	<0.1
		09T302 MNSI	●	●				<0.2
		09T304 MNSI	●	●				<0.4








◇ Positive 55° Diamond Type

Shape	Relief Angle	Cat. No.	Stock		Dimensions			
			AC9115T	AC9125T	Inscribed Circle	Thickness	Screw Hole Ø	Nose Radius
	7°	DCGT 11T301 MNFF	●	●	9.525	3.97	4.4	<0.1
		11T302 MNFF	●	●				<0.2
		11T304 MNFF	●	●				<0.4
	7°	DCMT 11T302 NLU	●	●	9.525	3.97	4.4	0.2
		11T304 NLU	●	●				0.4
		11T308 NLU	●	●				0.8
	7°	DCMT 11T302 NSU	●	●	9.525	3.97	4.4	0.2
		11T304 NSU	●	●				0.4
		11T308 NSU	●	●				0.8
	7°	DCGT 070201 MNSI	●	●	6.35	2.38	2.8	<0.1
		070202 MNSI	●	●				<0.2
		070204 MNSI	●	●				<0.4
		DCGT 11T301 MNSI	●	●				9.525
11T302 MNSI	●	●	<0.2					
11T304 MNSI	●	●	<0.4					
	7°	DCGT 11T301 MNSL	●	●	9.525	3.97	4.4	<0.1
		11T302 MNSL	●	●				<0.2
		11T304 MNSL	●	●				<0.4
	7°	DCMT 11T302 NGU	●	●	9.525	3.97	4.4	0.2
		11T304 NGU	●	●				0.4
		11T308 NGU	●	●				0.8

○ Negative Round Type

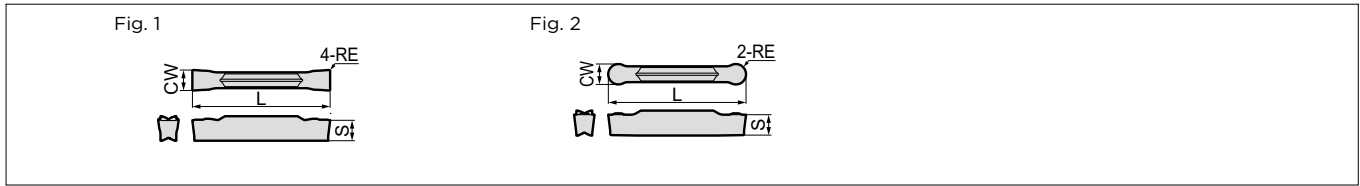
Shape	Relief Angle	Cat. No.	Stock		Dimensions			
			AC9115T	AC9125T	Inscribed Circle	Thickness	Screw Hole Ø	Nose Radius
	7°	RCMT 1204 MONRET	●	●	12,0	4,76	4,4	-
		1606 MONRET	●	●	16,0	6,35	5,0	-

◇ Positive 35° Diamond Type

Shape	Relief Angle	Cat. No.	Stock		Dimensions						
			AC9115T	AC9125T	Inscribed Circle	Thickness	Screw Hole Ø	Nose Radius			
	5°	VBMT 110308 NLU	●	●	6.35	3.18	2.8	0.8			
	5°	VBMT 110308 NSU	●	●	6.35	3.18	2.8	0.8			
		160404 NSU	●	●	9.525	4.76	4.4	0.4			
		160408 NSU	●	●				0.8			
	5°	VBGT 110301 MNSI	●	●	6.35	3.18	2.8	<0.1			
		110302 MNSI	●	●				<0.2			
		110304 MNSI	●	●				<0.4			
		VBGT 160402 MNSI	●	●				9.525	4.76	4.4	<0.2
		160404 MNSI	●	●							<0.4
160408 MNSI	●	●	<0.8								
	7°	VCMT 160404 NGU	●	●	9.525	4.76	4.4	0.4			
	7°	VCMT 160408 NLU	●	●	15.875	6.35	6.35	0.8			
	7°	VCMT 160404 NSU	●	●	9.525	4.76	4.4	0.4			
		160408 NSU	●	●				0.8			
	7°	VCGT 110301 MNSI	●	●	6.35	3.18	2.8	<0.1			
		110302 MNSI	●	●				<0.2			
		110304 MNSI	●	●				<0.4			
		VCGT 160402 MNSI	●	●				9.525	4.76	4.4	<0.2
		160404 MNSI	●	●							<0.4
160408 MNSI	●	●	<0.8								

AC9115T/AC9125T

■ Inserts for GNDM/GNDL Holders



■ Grooving / Traversing

Dimensions (mm)



Cat. No.	AC9115T	AC9125T	CW		RE	L	S	Fig.
			Cutting Width	Tolerance				
GCMN 3004 MG	●	●	3.00	±0.03	0.4	21.1	3.8	1
4004 MG	●	●	4.00	±0.03	0.4	26.7	4.0	
4008 MG	●	●	4.00	±0.03	0.8	26.7	4.0	
GCMN 3002 ML	●	●	3.00	±0.03	0.2	21.1	3.8	
3004 ML	●	●	3.00	±0.03	0.4	21.1	3.8	
4004 ML	●	●	4.00	±0.03	0.4	26.7	4.0	
4008 ML	●	●	4.00	±0.03	0.8	26.7	4.0	

■ Grooving / Cut-Off Machining

Dimensions (mm)



Cat. No.	AC9115T	AC9125T	CW		RE	L	S	Fig.
			Cutting Width	Tolerance				
GCMN 3002 GG	●	●	3.00	±0.03	0.2	21.1	3.8	1
3004 GG	●	●	3.00	±0.03	0.4	21.1	3.8	
4004 GG	●	●	4.00	±0.03	0.4	26.4	4.0	
GCMN 3002 GL	●	●	3.00	±0.03	0.2	21.1	3.8	
4004 GL	●	●	4.00	±0.03	0.4	26.4	4.0	
GCMN 2002 GF	●	●	2.00	±0.03	0.2	26.4	4.5	
3002 GF	●	●	3.00	±0.03	0.2	21.1	3.8	
4002 GF	●	●	4.00	±0.03	0.2	26.4	4.0	

Combine the insert with a holder such that the width of cut (CW) matches.

■ Profiling / Radius Grooving / Necking

Dimensions (mm)



Cat. No.	AC9115T	AC9125T	CW		RE	L	S	Fig.
			Cutting Width	Tolerance				
GCMN 3015 RG	●	●	3.0	±0.03	1.5	21.1	3.8	2
4020 RG	●	●	4.0	±0.03	2.0	26.4	4.0	

■ Recommended Cutting Conditions

(Red text indicates 1st recommendation)

Work Material	Application	Chipbreaker	Grade	Cutting Conditions Min. - Optimum - Max.		
				Depth of Cut ap (mm)	Feed Rate f (mm/rev)	Cutting Speed Vc (m/min)
Titanium Alloy (Pure Titanium (99.5%) $\alpha + \beta$ Alloy-based)	Finishing	NEF	AC9115T	0.2 - 0.5 - 1.5	0.10 - 0.15 - 0.20	50 - 75 - 100
	Continuous	NEG/NEX	AC9115T	0.5 - 1.0 - 2.5	0.10 - 0.20 - 0.25	40 - 60 - 80
	Light Interrupted	NEG/NEM	AC9115T	0.5 - 2.0 - 3.5	0.15 - 0.25 - 0.30	35 - 50 - 65
	Interrupted	NEM/NEG	AC9125T	1.0 - 2.0 - 3.5	0.20 - 0.25 - 0.30	20 - 40 - 60



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