

**Coated Carbide Grade for Small Product Turning** 

# **AC1135U**

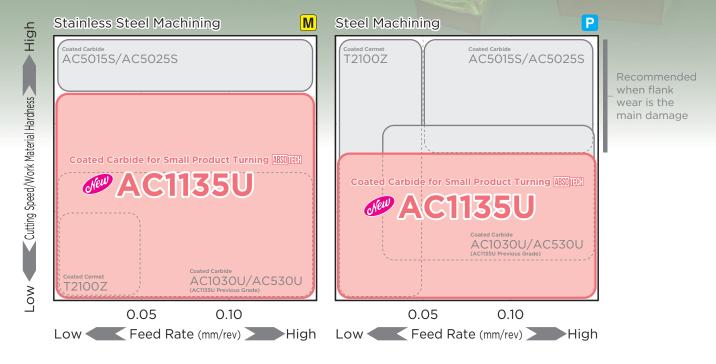
Versatile Coated Carbide Grade Specialized for Small Lathe/Autolathe Machining Machining of stainless steel, as well as a variety of other work materials



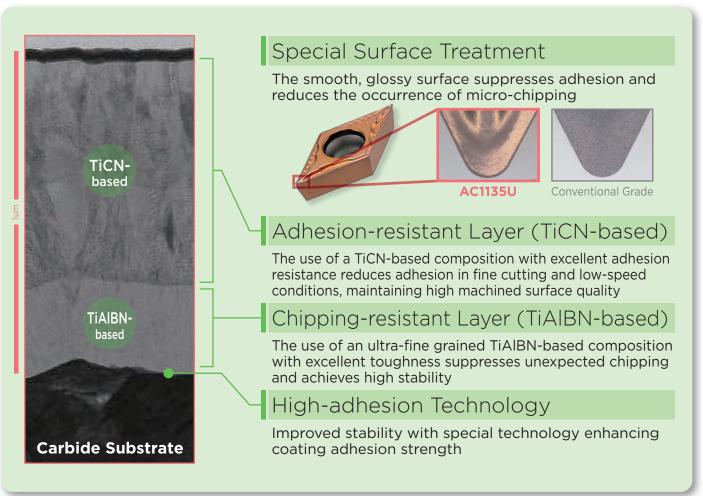


Sumi Small

■ Application Range



#### ■ Features of AC1135U



#### ■ Chipbreaker Selection (Main Chipbreakers)



ist recommendation for small lathes/autolathes

S type 3D G Class

Excellent chip control performance over a wide range of cutting conditions





type 3D G Class

Outstanding chip control in fine finishing applications



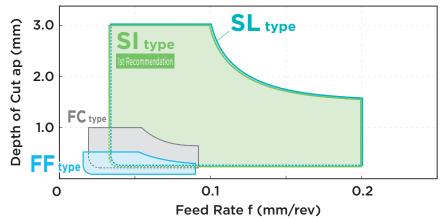


**SL** type 3D G Class

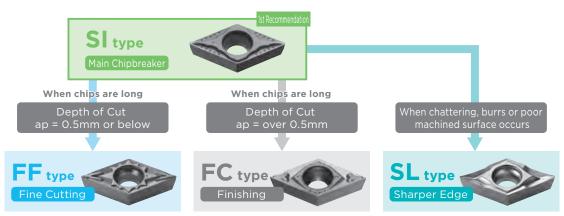
Exhibits excellent cutting edge sharpness over a wide range of cutting conditions. Emphasis on high machined surface quality



### **■** Chipbreaker Application Range



#### **■** Selecting Chipbreakers



### **■** Recommended Cutting Conditions

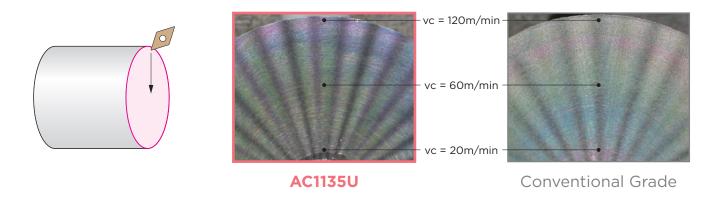
Work Material	P Free-Cutting Steel		P Carbo	on Steel	M Stainl	ess Steel	N Brass		
Grade	vc (m/min)	f (mm/rev)	vc (m/min)	f (mm/rev)	vc (m/min)	f (mm/rev)	vc (m/min)	f (mm/rev)	
AC1135U	50 - 200	0.02 - 0.15	50 - 200	0.02 - 0.10	50 - 150	0.02 - 0.10	70 - 300	0.05 - 0.20	

## ■ Characteristic Values

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (µm)	Features
For Small Lathes	AC1135U	91.6	3.8	ABSOTECH	1	The 1st recommended grade for high-precision machining  New coating layer and special surface treatment achieve high quality machined surfaces with long and stable tool life for machining stainless steel and a variety of other work materials

■ Machined Surface Quality in Facing (Stainless Steel)

# Excellent machined surface quality even at low speeds



Work Material: SUS316L Continuous Cutting Insert: DCGT11T302

Cutting Conditions:  $n = 1,800 \text{min}^{-1} \text{ f} = 0.05 \text{mm/rev ap} = 0.5 \text{mm}$  Wet (oil-based)

■ Machined Surface Quality in External Grooving (Stainless Steel)

# Machined surface quality superior to conventional grades



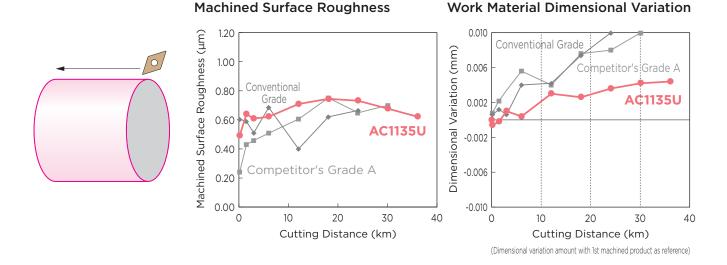
AC1135U

Conventional Grade

Work Material: SUS316L Continuous Cutting  $\emptyset$ 10mm Insert: DCGT11T302 Cutting Conditions: vc = 120m/min f = 0.05mm/rev ap = 0.5mm Wet (oil-based)

#### ■ Stability in External Grooving (Stainless Steel)

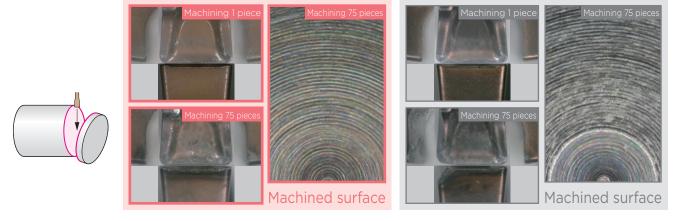
## Machined surface quality and dimensional accuracy can be maintained over a longer period



Work Material: SUS316L Continuous Cutting  $\emptyset$ 10mm L = 14mm Insert: DCGT11T302 Cutting Conditions: vc = 120m/min f = 0.05mm/rev ap = 0.5mm Wet (oil-based)

■ Machined Surface Quality in Cut-off Machining (Stainless Steel)

### Achieves 1.7x longer tool life than conventional grades and reduced tearing on machine surface



AC1135U
Reduced tearing, machining continued through 125 pieces

Conventional Grade
Tearing, machining unable to continue at 75 pieces

Work Material: SUS316L Cut-off ø10mm Insert: GCMN2002-GF Cutting Conditions:  $n = 3,000min^{-1}$  f = 0.05mm/rev Wet (oil-based)

# **⊗**80° Diamond type Positive Inserts

			Stock	Di	mensio	ons (m	m)
Shape	Relief Angle	Cat. No.	AC1135U	Inscribed Circle	Thickness	Hole Dia.	Corner Radius
		CCGT 060201MN-FF	•				< 0.1
		060202MN-FF		6.35	2.38	2.8	< 0.2
	7°	060204MN-FF	•				< 0.4
	·	CCGT 09T301MN-FF					< 0.1
		09T302MN-FF		9.525	3.97	4.4	< 0.2
FF		09T304MN-FF	•				< 0.4
		CCGT 060201MN-FC					< 0.1
		060202MN-FC		6.35	2.38	2.8	< 0.2
	7°	060204MN-FC					< 0.4
		CCGT 09T301MN-FC					< 0.1
		09T302MN-FC	•	9.525	3.97	4.4	< 0.2
FC		09T304MN-FC					< 0.4
		CCGT 060201MN-SI	•				< 0.1
		060202MN-SI	•	6.35	2.38	2.8	< 0.2
	7°	060204MN-SI	•				< 0.4
		CCGT 09T301MN-SI					< 0.1
		09T302MN-SI	•	9.525	3.97	4.4	< 0.2
SI		09T304MN-SI	•				< 0.4
		CCGT 060201MN-SL	•	6.35	2.38	2.8	< 0.1
		060202MN-SL	•				< 0.2
7°	/ -	CCGT 09T301MN-SL	•				< 0.1
		09T302MN-SL	•	9.525	3.97	4.4	< 0.2
SL		09T304MN-SL					< 0.4

# **○**55° Diamond type Positive Inserts

			Stock	Di	mensio	ons (m	m)
Shape	Relief Angle	Cat. No.	AC1135U	Inscribed Circle	Thickness	Hole Dia.	Corner Radius
		DCGT 070201MN-FF	•				< 0.1
		070202MN-FF		6.35	2.38	2.8	< 0.2
-	7°	070204MN-FF	•				< 0.4
	'	DCGT 11T301MN-FF					< 0.1
		11T302MN-FF		9.525	3.97	4.4	< 0.2
FF		11T304MN-FF	•				< 0.4
	7°	DCGT 070201MN-FC	•				< 0.1
		070202MN-FC	•	6.35	2.38	2.8	< 0.2
1		070204MN-FC					< 0.4
		DCGT 11T301MN-FC			7.07		< 0.1
		11T302MN-FC	•	9.525	3.97	4.4	< 0.2
FC		11T304MN-FC	•				< 0.4
		DCGT 070201MN-SI	•				< 0.1
		070202MN-SI		6.35	2.38	2.8	< 0.2
	7°	070204MN-SI					< 0.4
		DCGT 11T301MN-SI 11T302MN-SI		9.525	3.97	4.4	< 0.1
SI SI		11T302MN-SI		9.525	3.97	4.4	< 0.2
J 31		DCGT 070201MN-SL					< 0.4
		070202MN-SL		6.35	2.38	2.8	< 0.1
		070202MN-SL		0.33	2.30	2.0	< 0.2
	7°	DCGT 11T301MN-SL					< 0.4
		11T302MN-SL		9.525	3.97	4.4	< 0.1
l SL		11T304MN-SL		7.525	3.97	7.4	< 0.2
		1113041-114-3E		L			\ 0.4

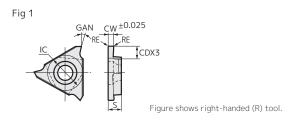
# **△** Triangular type Positive Inserts

			Stock	Di	mensio	ons (m	m)
Shape	Relief Angle	Cat. No.	AC1135U	Inscribed Circle	Thickness	Hole Dia.	Corner Radius
000		TCGT 110201MN-FF		6.35	2.38	2.8	< 0.1
	7°	110202MN-FF					< 0.2
₩ FF		110204MN-FF					< 0.4
000		TCGT 110201MN-SI	•	6.35	2.38	2.8	< 0.1
	7°	110202MN-SI					< 0.2
₩ SI		110204MN-SI					< 0.4
000		TPGT 080201MN-FF	•	4.76	2.38	2.4	< 0.1
	11°	080202MN-FF	•				< 0.2
FF		080204MN-FF					< 0.4
	11°	TPGT 110302MN-FC		6.35	3.18	3.4	< 0.2
	L	110304MN-FC					< 0.4
FC FC							
000		TPGT 080201MN-SI		4.76	2.38	2.4	< 0.1
	11°	080202MN-SI					< 0.2
₩ SI		080204MN-SI					< 0.4

# **35° Diamond type Positive Inserts**

			Stock	Di	mensio	ons (m	m)
Shape	Relief Angle	Cat. No.	AC1135U	Inscribed Circle	Thickness	Hole Dia.	Corner Radius
		VBGT 110301MN-SI	•				< 0.1
	5°	110302MN-SI		6.35	3.18	2.8	< 0.2
		110304MN-SI	•			2.0	< 0.4
(A)	> <del>                                    </del>	110308MN-SI	•				< 0.8
		VBGT 160401MN-SI					< 0.1
	5°	160402MN-SI		9.525	4.76	4.4	< 0.2
l cı	SI	160404MN-SI 160408MN-SI					< 0.4
31		VCGT 110301MN-FF					< 0.8
- R	7°	110302MN-FF		6.35	3.18	2.8	< 0.2
FF		110304MN-FF		0.55	3.10	2.0	< 0.4
	7°	VCGT 080204MN-FC	•	4.76	2.38	2.3	< 0.4
		VCGT 110301MN-FC	•				< 0.1
	7°	110302MN-FC		6.35	3.18	2.8	< 0.2
FC		110304MN-FC	•				< 0.4
		VCGT 110301MN-SI					< 0.1
	7°	110302MN-SI		6.35	3.18	2.8	< 0.2
	,	110304MN-SI		0.55	3.10	2.0	< 0.4
S A		110308MN-SI	•				< 0.8
		VCGT 160401MN-SI	•				< 0.1
	7°	160402MN-SI		9.525	4.76	4.4	< 0.2
SI		160404MN-SI 160408MN-SI	•				< 0.4
31		VCGT 110301MN-SL					< 0.8
	7°	110301MN-SL		6.35	3.18	2.8	< 0.1
SL	,	110304MN-SL		0.55	3.10	2.0	< 0.4
32		VPGT 110301MN-FF					< 0.1
FF	11°	110302MN-FF	•	6.35	3.18	2.8	< 0.2
A	11°	VPGT 110301MN-SI	•	6.75	7.40	2.0	< 0.1
SI	11	110302MN-SI	•	6.35	3.18	2.8	< 0.2

# SEC-Grooving Tool GWC type / Indexable Head Type Quick Change Holder APM series Insert for GWC type Head



Gr	ade	Cutting Edge Shape	GAN
Coated Carbide	AC1135U	Honing	15°





#### Insert (Grooving)

insert (Grooving)									Dimensio	ons (mm)
Cat. No.	AC1	135U	Width of Cut		roove Depth X3	Corner Radius	Inscribed Circle	Thickness	Applicable Holder/Head	Fig
Cat. No.	R	L	CW	External Turning	Internal Turning	RE	IC	S	дритевые потчет/пева	1 19
TGA R/L3033	•	•	0.33	0.8	0.5	0.05	9.525	3.18		1
TGA R/L3050	•	•	0.50	1.2	0.8	0.05	9.525	3.18		1
TGA R/L3075		•	0.75	2.0	1.5	0.1	9.525	3.18		1
TGA R/L3095		•	0.95	2.0	1.5	0.1	9.525	3.18		1
TGA R/L3100		•	1.00	2.0	1.5	0.1	9.525	3.18		1
TGA R/L3110		•	1.10	2.0	1.5	0.1	9.525	3.18		1
TGA R/L3120		•	1.20	2.0	1.5	0.1	9.525	3.18	Holder	1
TGA R/L3125		•	1.25	2.0	1.5	0.1	9.525	3.18	GWC···3	1
TGA R/L3135		•	1.35	2.0	1.5	0.1	9.525	3.18	GWCS···3 GWCI···325	1
TGA R/L3145		•	1.45	2.0	1.5	0.1	9.525	3.18	GVVC1 · · · 525	1
TGA R/L3150		•	1.50	2.0	1.5	0.1	9.525	3.18	Head	1
TGA R/L3160		•	1.60	2.0	1.5	0.1	9.525	3.18	APMOO-GWCR-R3J	1
TGA R/L3165		•	1.65	2.0	1.5	0.1	9.525	3.18	APM○○-GWCR···-L3J	1
TGA R/L3175		•	1.75	2.0	1.5	0.1	9.525	3.18		1
TGA R/L3185	•	•	1.85	2.0	1.5	0.1	9.525	3.18		1
TGA R/L3200		•	2.00	2.5	2.0	0.1	9.525	3.18		1
TGA R/L3220		•	2.20	2.5	2.0	0.1	9.525	3.18		1
TGA R/L3250		•	2.50	2.5	2.0	0.1	9.525	3.18		1
TGA R/L3280		•	2.80	2.5	2.0	0.1	9.525	3.18		1

Right-handed (R) inserts are used with right-handed (part number suffix: -R3J) holders and heads.

### SEC-Grooving Tool GND type / Indexable Head Type Quick Change Holder APM series Insert for GND type Head

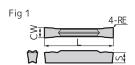
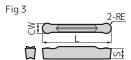


Fig 2 (Figure shows right-handed (R) tool.)

Dimensions (mm)

Dimensions (mm)





#### **Grooving / Traverse Cutting**

Dimensions (ii										
Cat. No.	11350	£ CA		Corner Radius	Overall Length	Thickness	s/Pack	Fig		
	AC	Width of Cut	Tolerance	RE	L	S	PC			
GCM N3002-MG		3.0	±0.03	0.2	21.1	3.8		1		
N3004-MG		3.0	±0.03	0.4	21.1	3.8		1		
GCM N2002-ML		2.0	±0.03	0.2	21.1	3.6	5	1		
GCM N3002-ML		3.0	±0.03	0.2	21.1	3.8		1		
N3004-ML		3.0	+0.03	0.4	21.1	3.8		1		

# **Cut-off (Handed Edge)**

Cut-off (Handed Edge) Dimension									
Cat. No.	AC1135U	PSI Fead Angle	Width of Cut  CW  I Width of Cut   Tolerar		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM R2002-CG-05	•	5°	2.0	±0.03	0.2	21.1	3.6		2
L2002-CG-05		5°	2.0	±0.03	0.2	21.1	3.6		2
GCM R3002-CG-05	•	5°	3.0	±0.03	0.2	21.3	3.8	5	2
L3002-CG-05		5°	3.0	±0.03	0.2	21.3	3.8		2
GCM R20003-CF-15		15°	2.0	±0.08	0.03	22.4	3.6		2
00110 01111	a								

GCM R: Right-handed, GCM L: Left-handed

#### **Grooving / Cut-off**

Cat. No.	AC1135U	C		Corner Radius	Overall Length	Thickness	Pcs/Pack	Fig
GCM N2002-GG		2.0	±0.03	0.2	21.1	3.6		1
GCM N3002-GG		3.0	±0.03	0.2	21.1	3.8		1
N3004-GG		3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GL		2.0	±0.03	0.2	21.1	3.6		1
N2004-GL		2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GL		3.0	±0.03	0.2	21.1	3.8	5	1
N3004-GL		3.0	±0.03	0.4	21.1	3.8		1
GCM N2002-GF		2.0	±0.03	0.2	21.1	3.6		1
N2004-GF		2.0	±0.03	0.4	21.1	3.6		1
GCM N3002-GF		3.0	±0.03	0.2	21.1	3.8		1
N3004-GF		3.0	±0.03	0.4	21.1	3.8		1

#### External Profiling / External Radius Grooving Dimensions (mm)

					5	Dilliciale	1113 (	
Cat. No.	11350		of Cut <b>W</b>	Corner Radius	Overall Length	Thickness	s/Pack	Fig
	A	Width of Cut	Tolerance	RE	L	S	PC	
GCM N3015-RG	•	3.0	±0.03	1.5	21.1	3.8	5	3

#### Profiling / Radius Grooving / Necking

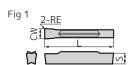
Cat. No.	11350		Width of Cut		Corner Overall Thickne		s/Pack	Fig
	A	Width of Cut	Tolerance	RE	L	S	PC	
GCM N2010-RN		2.0	±0.03	1.0	21.7	3.6	5	3
N3015-RN		3.0	$\pm 0.03$	1.5	22.6	3.8	را	3

### Part Number Suffix Code (Chipbreakers)

Туре	Symbol	Application		Туре	Symbol	Application
Grooving /	MG	Multi-functional / General-purpose		Cut-off	CG	Cut-off / General-purpose
Traverse Cutting	ML	Multi-functional / Low feed		(Handed Edge)	CF	Cut-off / Low cutting force
Grooving /	GG	Grooving / General-purpose		External Profiling / External Radius Grooving	RG	Profiling / General-purpose
Cut-off	GL	Grooving / Low feed		Profiling / Radius Grooving / Necking	RN	Facing / Necking / General-purpose
Cut-oit	GF	Grooving / Low cutting force	ĺ			

Select holders and inserts with matching width of cut (CW). Not usable with GNDXL type / GNDIS type holders.

# **SEC-Grooving Tool GNDXL type**





#### Grooving / Traverse Cutting (1-cornered) Dimensions (mm)

5,			<b>5</b> \					,
Cat. No.	11350	Width of Cut		Corner Radius	Overall Length	Thickness	s/Pack	Fig
	AC	Width of Cut	Tolerance	RE	L	S	Pc	
GCM N3002-ML1		3.0	±0.03	0.2	21.1	3.8	5	1

#### Grooving / Cut-off (1-cornered)

ordering, car or (received,									
Cat. No.	11350	Width of Cut CW		Corner Radius	Overall Length	Thickness	s/Pack	Fig	
	AC	Width of Cut	Tolerance	RE	L	S	Ğ		
GCM N3002-GF1		3.0	±0.03	0.2	21.1	3.8	5	1	

#### Part Number Suffix Code (Chipbreakers)

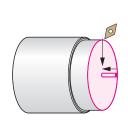
Type	Symbol	Application	Type	Symbol	Application
Grooving / Traverse Cutting	ML1	Multi-functional / Low feed	Profiling / Radius Grooving	RN1	General-purpose
Grooving / Cut-off	GF1	Grooving / Low cutting force			

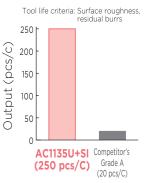
Select holders and inserts with matching width of cut (CW). Use in combination with GNDXL type holders. Not usable with GNDIS type holders.

#### ■ Application Examples

#### SUS316L Double Melt Semiconductor Manufacturing Equipment Component M

Suppresses cutting edge chipping to achieve 12.5x longer tool life

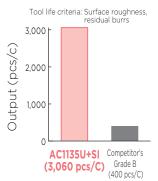




SUS316L Double Melt Semiconductor Manufacturing Equipment Component M

Suppresses wear to achieve 7.5x longer tool life





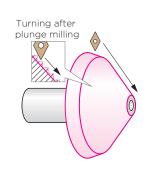
Tool: DCGT070201MN-SI (AC1135U) Continuous External Turning and Facing Cutting Conditions: vc = 110m/min f = 0.04mm/rev ap = 0.05-0.20mmWet (oil-based)

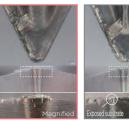
Tool: DCGT11T301MN-SI (AC1135U) Continuous External Turning and Facing Cutting Conditions: vc = 110m/min f = 0.04mm/rev ap = 0.15mmWet (oil-based)

## SUS304 Beverage Device Component M

# **SUS304 Medical Device Component**

Minimal damage in comparison to machining the same number of workpieces with competitor's grade





Competitor's Grade C AC1135U+SI (3,000 pcs/C) (3,000 pcs/C)

Good machined surface quality even when machining twice the number of workpieces as competitor's grade



Tool life criteria: Surface roughness, appearance



AC1135U+SI (10,000 pcs/C)

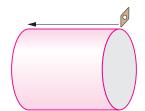
Competitor's Grade D (5,000 pcs/C)

Tool: DCGT070202MN-SI (AC1135U) Continuous External Turning Cutting Conditions: vc = 50m/min f = 0.03mm/rev ap = 0.2mmWet (oil-based)

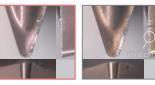
Tool: DCGT070201MN-SI (AC1135U) Continuous External Turning Cutting Conditions: vc = 40m/min f = 0.04mm/rev ap = 0.2mmWet (oil-based) Low-frequency vibration cutting

# SUS304 Electrical Device Component [M]

Suppresses chipping for good machined surface quality in comparison to machining the same number of workpieces with conventional grade



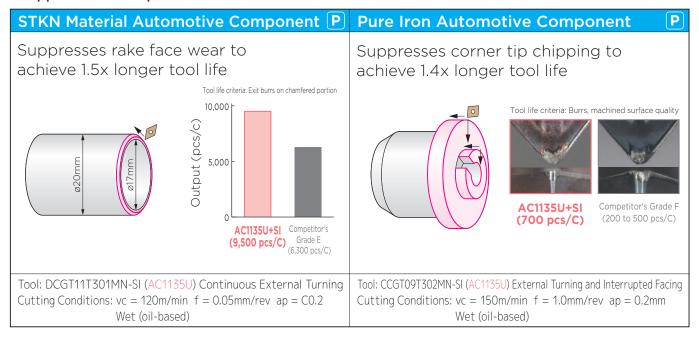
Tool life criteria: Surface roughness Ra0.2 or below, appearance



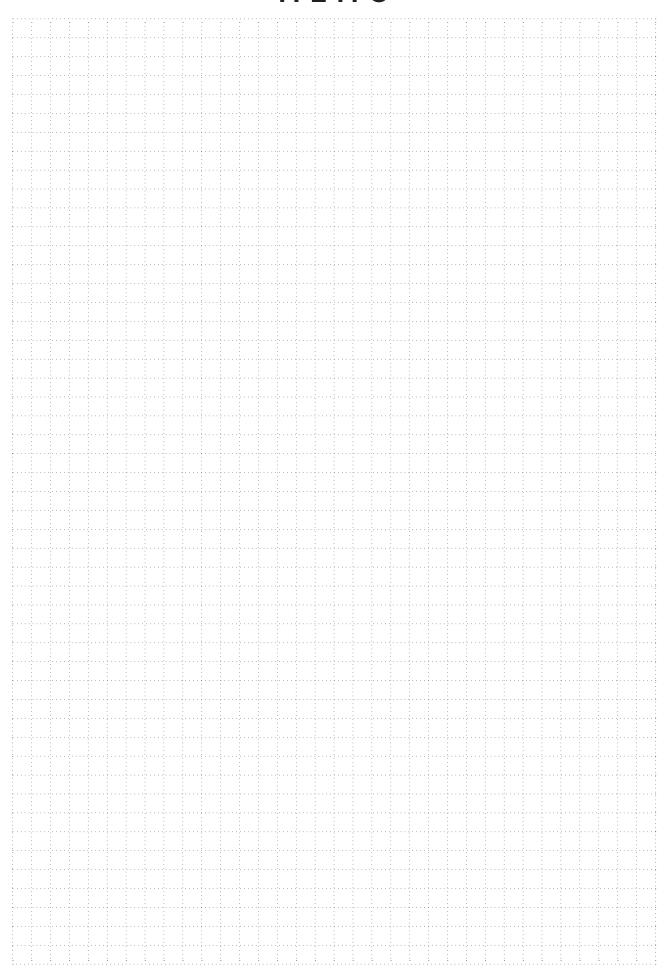
Conventional Grade

Tool: VCGT110302MN-SI (AC1135U) Continuous External Turning Cutting Conditions: vc = 50m/min f = 0.02mm/rev ap = 1.0mmWet (oil-based)

#### ■ Application Examples



# **MEMO**





● Very hot or lengthy chips may be discharged while the machine is in operation. Therefore, machine guards, safety goggles or other protective covers must be used. Fire safety precautions must also be considered.

■ Please handle with care as this product has sharp edges. Improper cutting conditions or mis-handling of the tool may result in breakages or projectiles. Therefore, please use that a fire extinguisher is use the tool within its recommended conditions.

#### < SAFETY NOTES >-

# Sumitomo Electric Industries, Ltd.

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