ACHTECK
澳克泰工具

2025.11

Small Parts Universal Geometry
——UM Geometry

Longer tool life
with stronger edge design

Wider application window
with excellent chip control

www.achtecktool.com

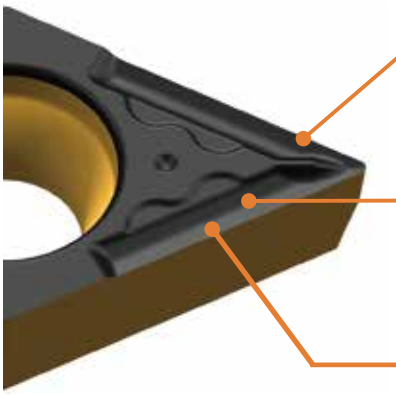
NO.112

Small Parts Universal Geometry

UM Geometry

Geometry Characteristics

The high-strength cutting edge excels in tough conditions with excellent durability. Its superior chip control breaks chips effectively, preventing entanglement for safer and more efficient machining.



- **Hihg Nose Strength**

Flat edge design, small rake angle, optimized edge preparation

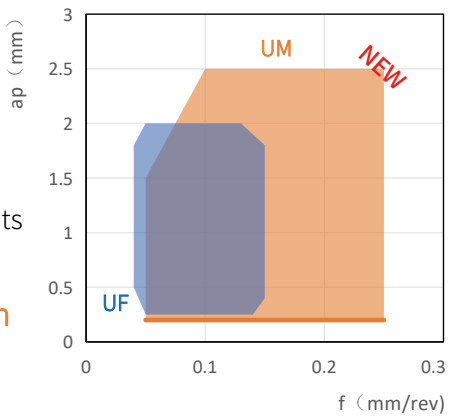
- **Superior Chip Breaking**

Variable chip groove width adapts to different depths of cut

- **Excellent Chip Evacuation**

Large chip pocket ensures s mooth chip flow

Chip Breaking Scopes



Grades Configuration

General Machining
Primary Recommendation

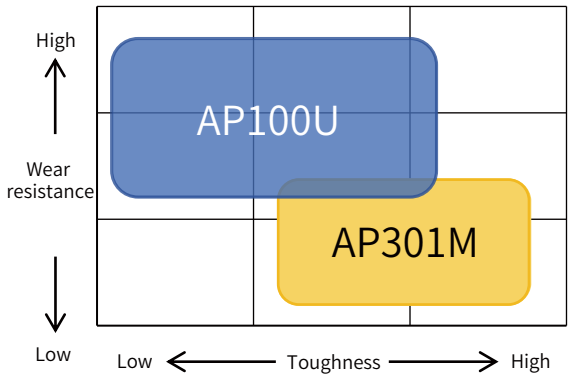
AP100U
P10-P30
M10-M30

Ultra-fine tungsten carbide substrate with high hardness and good toughness

Stainless Steel
Primary Recommendation

AP301M
M15-M35
S15-S35

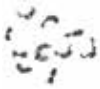
Excellent built-up edge resistance and machining stability



Material	Steel (carbon steel / alloy steel)	Stainless steel	High-temperature alloy
Machining Applications	Finishing ⟷ Roughing	Finishing ⟷ Roughing	Finishing ⟷ Roughing
ISO Classification	P01 P10 P20 P30 P40	M01 M10 M20 M30 M40	S01 S10 S20 S30 S40
UM Geometry	AP100U	AP100U	
		AP301M	AP301M

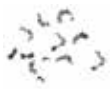
Chip Breaking Test

UM

ap / f	0.08	0.10	0.15	0.20
2.0				
1.5				
1.0				
0.4				

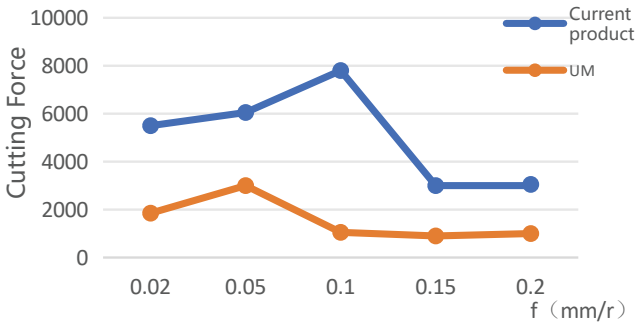
Workpiece Material：45#　Cutting Conditions：Vc 120m/min

Competitor Product

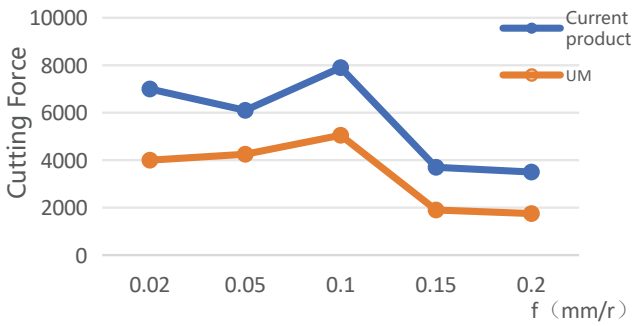
ap / f	0.08	0.10	0.15	0.20
2.0				
1.5				
1.0				
0.4				

Workpiece Material：45#　Cutting Conditions：Vc 120m/min

Cutting Force Test

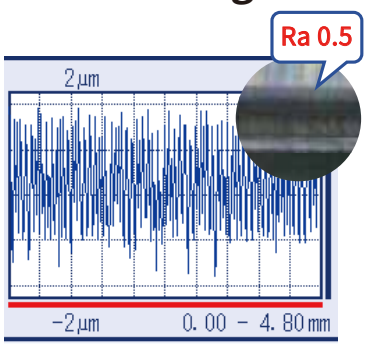


Workpiece Material：304 Stainless Steel
Cutting Conditions：Vc 80m/min ap 0.6mm Wet

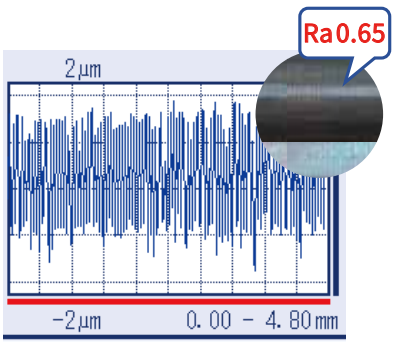


Workpiece Material：45#
Cutting Conditions：Vc 120m/min ap 0.4mm Wet

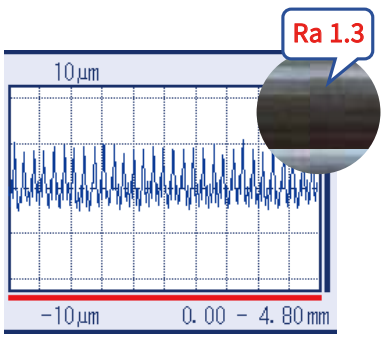
Surface Roughness Test



f0.04mm/r



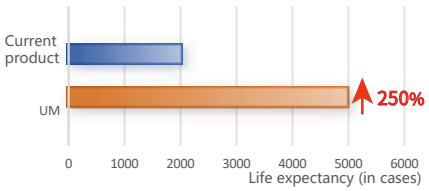
f0.08mm/r

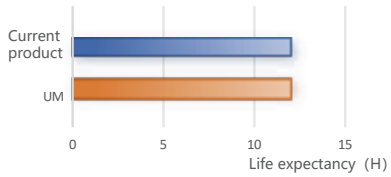


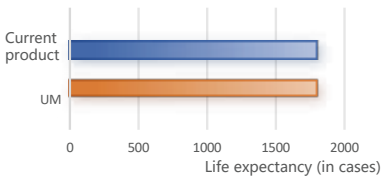
f0.15mm/r

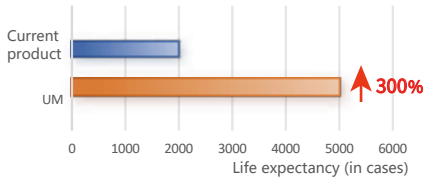
Workpiece Material：45#　Cutting Conditions：Vc 120m/min ap 1.5mm Wet

Processing examples

Tool Model	DCGT 11T302FP-UM AP301M
Machined Part	Distance Pin 
Material	45#
Cutting Speed	37.7 m/min
Spindle Speed	4000 rpm
Feed Rate	0.065-0.08 mm/r
Depth of Cut	0.03 mm
Coolant	Oil
Result	 Tool life improve significantly

Tool Model	DCGT 11T304E-UM AP100U
Machined Part	shaft 
Material	40Cr
Cutting Speed	193 m/min
Spindle Speed	3500 rpm
Feed Rate	0.05 mm/r
Depth of Cut	0.1 mm
Coolant	Emulsion
Result	 Similar tool life,but better CPP

Tool Model	DCGT 11T302FP-UM AP301M
Machined Part	Bearing Housing 
Material	SUS304
Cutting Speed	130 m/min
Spindle Speed	3800 rpm
Feed Rate	0.15 mm/r
Depth of Cut	0.35-0.50 mm
Coolant	Emulsion
Result	 Similar tool life,but better CPP

Tool Model	DCGT 11T304E-UM AP100U
Machined Part	Vacuum Pump Drive Head 
Material	45#
Cutting Speed	80 m/min
Spindle Speed	1800 rpm
Feed Rate	0.04 mm/r
Depth of Cut	0.05 mm
Coolant	Dry
Result	 Tool life improve significantly

Product List

Insert Illustration	Specification	RE	Recommended Parameters		Grade	
			f(mm/rev)	ap(mm)	AP100U	AP301M
	CCGT 060201E-UM	0.1	0.07-0.2	0.4-2.5		
	060202E-UM	0.2	0.07-0.2	0.4-2.5	○	○
	060204E-UM	0.4	0.07-0.2	0.4-2.5	●	○
	09T3005E-UM	0.05	0.07-0.2	0.4-2.5		
	09T301E-UM	0.1	0.07-0.2	0.4-2.5	○	●
	09T302E-UM	0.2	0.07-0.2	0.4-2.5	○	○
	09T304E-UM	0.4	0.07-0.2	0.4-2.5	○	○
	060201FP-UM	0.1	0.07-0.2	0.4-2.5	●	○
	060202FP-UM	0.2	0.07-0.2	0.4-2.5		
	060204FP-UM	0.4	0.07-0.2	0.4-2.5		
	09T3005FP-UM	0.05	0.07-0.2	0.4-2.5		
	09T301FP-UM	0.1	0.07-0.2	0.4-2.5		
	09T302FP-UM	0.2	0.07-0.2	0.4-2.5		
	09T304FP-UM	0.4	0.07-0.2	0.4-2.5		
	DCGT 0702005E-UM	0.05	0.07-0.2	0.4-2.5		
	070201E-UM	0.1	0.07-0.2	0.4-2.5	○	○
	070202E-UM	0.2	0.07-0.2	0.4-2.5	○	○
	070204E-UM	0.4	0.07-0.2	0.4-2.5	○	○
	11T3005E-UM	0.05	0.07-0.2	0.4-2.5		
	11T301E-UM	0.1	0.07-0.2	0.4-2.5	●	○
	11T302E-UM	0.2	0.07-0.2	0.4-2.5	●	●
	11T304E-UM	0.4	0.07-0.2	0.4-2.5	●	●
	0702005FP-UM	0.05	0.07-0.2	0.4-2.5		
	070201FP-UM	0.1	0.07-0.2	0.4-2.5		
	070202FP-UM	0.2	0.07-0.2	0.4-2.5		
	070204FP-UM	0.4	0.07-0.2	0.4-2.5		
	11T3005FP-UM	0.05	0.07-0.2	0.4-2.5		
	11T301FP-UM	0.1	0.07-0.2	0.4-2.5	●	●
	11T302FP-UM	0.2	0.07-0.2	0.4-2.5	●	●
	11T304FP-UM	0.4	0.07-0.2	0.4-2.5		

●-Running stock ○-Rolling stock

Product List

Insert Illustration	Specification	RE	Recommended Parameters		Grade	
			f(mm/rev)	ap(mm)	AP100U	AP301M
	VBGT 1103005E-UM	0.05	0.07-0.2	0.4-2.5		
	110301E-UM	0.2	0.07-0.2	0.4-2.5	○	○
	110302E-UM	0.3	0.07-0.2	0.4-2.5	●	●
	110304E-UM	0.4	0.07-0.2	0.4-2.5	●	○
	1103005FP-UM	0.05	0.07-0.2	0.4-2.5		
	110301FP-UM	0.2	0.07-0.2	0.4-2.5	●	○
	110302FP-UM	0.3	0.07-0.2	0.4-2.5	●	●
	110304FP-UM	0.4	0.07-0.2	0.4-2.5		
	VCGT 110301E-UM	0.1	0.07-0.2	0.4-2.5	○	○
	110302E-UM	0.2	0.07-0.2	0.4-2.5	●	●
	110304E-UM	0.4	0.07-0.2	0.4-2.5	●	○
	110301FP-UM	0.1	0.07-0.2	0.4-2.5	●	●
	110302FP-UM	0.2	0.07-0.2	0.4-2.5	○	●
	110304FP-UM	0.4	0.07-0.2	0.4-2.5		
	VPGT 110301E-UM	0.1	0.07-0.2	0.4-2.5		
	110302E-UM	0.2	0.07-0.2	0.4-2.5		
	110301FP-UM	0.1	0.07-0.2	0.4-2.5		●
	110302FP-UM	0.2	0.07-0.2	0.4-2.5		○

●-Running stock ○-Rolling stock