

AM Chip Breaker

Positive

Positive turning insert for Aluminum cutting (medium cutting)

- Applying surface finish and toughness balanced cutting edge for general use (light interrupted cutting ~ continuous cutting)
- Stable machining and high productivity with good chip evacuation even in high feed speed cutting



Positive turning insert for Aluminum cutting (medium cutting)

AM Chip Breaker (Positive)

Aluminum is a type of light metal with high machinability but it is necessary to machine it with care because the material is vulnerable to welding and scratches. The usage of it keeps increasing with rising demands on light weight parts and enhanced accessibility of recycling.

KORLOY launches AM chip breaker minimizing welding, better chip evacuation and enhanced surface finish in Aluminum light interrupted cutting to continuous cutting.

The **AM chip breaker** with 2 step rake angle for protecting cutting edge increases cutting edge strength and surface finish. Its bridge structure for preventing chip jam makes good chip evacuation and surface finish.

AM chip breaker with good chip evacuation and enhanced surface finish in medium cutting is the best solution increasing productivity and efficiency in Aluminum part machining and non-ferrous metal cutting.

» **Vast cutting range**

- Wide cutting range from light interrupted cutting to continuous cutting

» **Better welding resistance**

- Sharp cutting edge and mirror-like finishing

» **Good surface finish**

- Enhanced chip evacuation by bridge design to prevent chip jam

» **Stable tool life**

- Improved cutting edge strength and good surface finish with 2 step rake angle



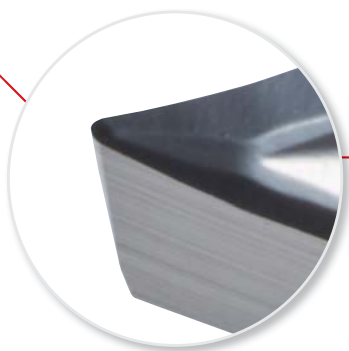
✓ Chip breaker features

AM chip breaker (for medium Aluminum cutting)

- Preventing welding and chip jam with internal bridge structure enhancing smooth chip flow
- Balanced surface finish and toughness from nose R and 2 step side rake angle
- Preventing minor cutting edge fracture with divided bridge structure on the top surface bottom part blocks chips over minor cutting edge

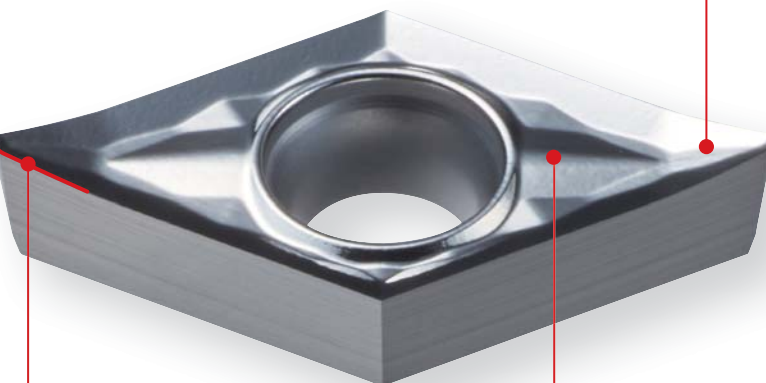
Nose R and 2 step rake angle

- Balanced surface finish and toughness
- Smooth chip evacuation



Internal bridge

- Preventing welding and chip jam
- Smooth chip flow and chip control



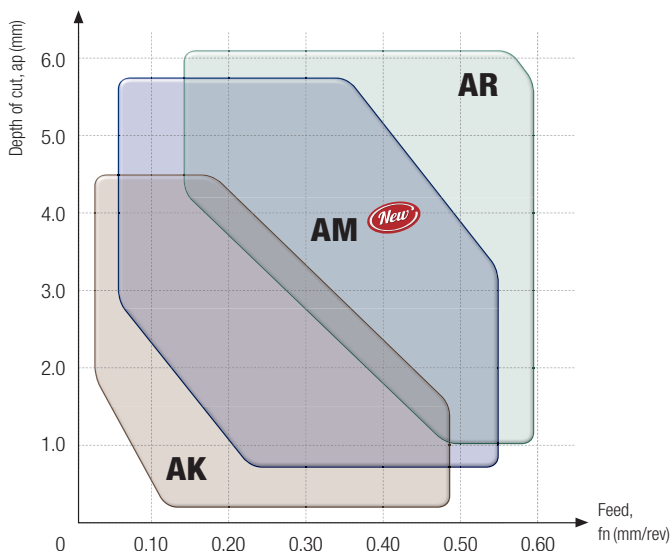
Side 2 step rake angle

- Longer effective cutting edge
- Minimized cutting resistance
- Good surface finish

Trigonal knobs on the back

- Effective chip breaking in medium cutting
- Less cutting resistance due to smooth chip flow
- Directing flow of long chip for stable chip evacuation
- Protecting cutting edge with a structure preventing chip jam

✓ Application range



Cutting range	Chip breaker	ap (mm)	fn (mm/rev)
Roughing	AR	0.50 ~ 6.00	0.05 ~ 0.60
Medium to finishing ~ Medium to roughing	AM <i>New</i>	0.30 ~ 5.50	0.04 ~ 0.55
Finishing ~ medium cutting	AK	0.10 ~ 5.00	0.03 ~ 0.50

- AK: 1st recommended in Aluminum and non-ferrous metal cutting
- AM: recommended in medium cutting and light interrupted cutting
- AM: 1st recommended in Aluminum wheel machining
- AR: recommended when high toughness is required in heavily interrupted cutting

Recommended cutting conditions

Workpiece				Specific cutting force (N/mm ²)	Brinell hardness (HB)	Wear resistance	Toughness	Medium to finishing	Medium to roughing	Finishing	medium cutting	
ISO	Workpiece materials	ISO	AISI			High speed and continuous cutting	Low speed and heavy interrupted cutting	Light interrupted cutting	Continuous cutting			
						Grade		Chip breaker				
						H01	H05	AM	AK			
						vc (m/min)	fn (mm/rev)	ap (mm)	fn (mm/rev)	ap (mm)		
N	Aluminum forged alloy	Non - aging	AlMg1SiCu	6061	400	60	240	225	0.55	0.3 ~ 5.5	0.50	0.1 ~ 5.0
							1980	1800	0.25		0.20	
							2470	2250	0.04		0.03	
		Aged	AlZn5.5MgCu	7075	500	70	240	225	0.55		0.50	
							1980	1800	0.25		0.20	
							2470	2250	0.04		0.03	
	Aluminum cast alloy	Non - aging	Al-8SiCu3Fe	A380.0	600	75	240	225	0.55		0.50	
							1980	1800	0.25		0.20	
							2470	2250	0.04		0.03	
		Aged	Al-Cu4Ni2Mg2	242.0	700	90	240	225	0.55		0.50	
							1980	1800	0.25		0.20	
							2470	2250	0.04		0.03	
	Copper alloy	Free cutting alloy (1% ≥ Pb)	CuZn39Pb0.5	C36500	550	110	70	65	0.55		0.50	
							550	500	0.25		0.20	
							690	630	0.04		0.03	
		Brass	CuZn36Pb3	CDA360	550	90	70	65	0.55		0.50	
							550	500	0.25		0.20	
							690	630	0.04		0.03	
	Electrolytic copper	-	-	-	1350	100	45	40	0.55		0.50	
							330	300	0.25		0.20	
400							370	0.04	0.03			
Non-ferrous	Duroplastic, reinforced carbon fiber	-	-	-	-	-	-	0.55	0.50			
						-	-	0.25	0.20			
						-	-	0.04	0.03			
						-	-	0.55	0.50			
Hard rubber	-	-	-	-	-	-	-	0.25	0.20			
						-	-	0.04	0.03			

• Please refer to the page 7 for detailed depth of cut of chip breakers

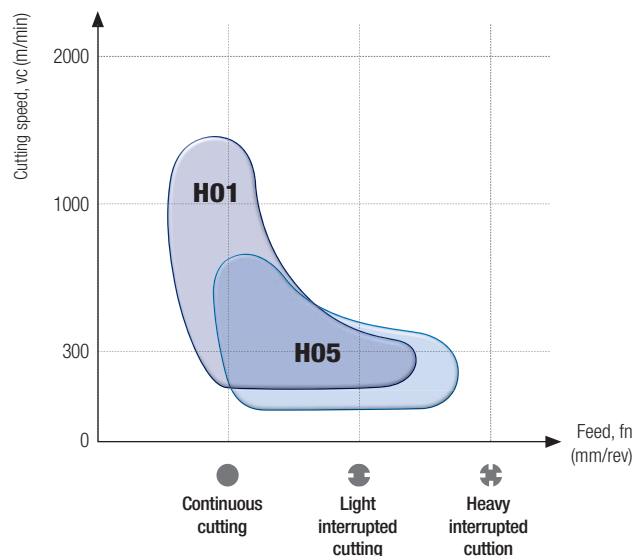
Grade features

H01

- Good wear resistance with ultra-fine substrate
- Enhanced welding resistance by special surface treatment technology

H05

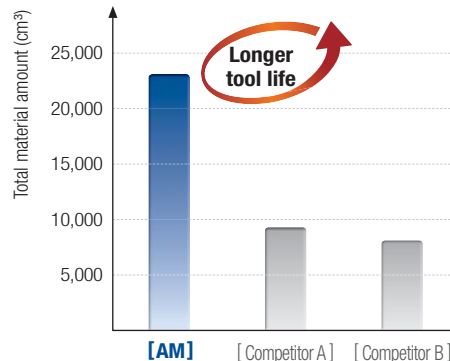
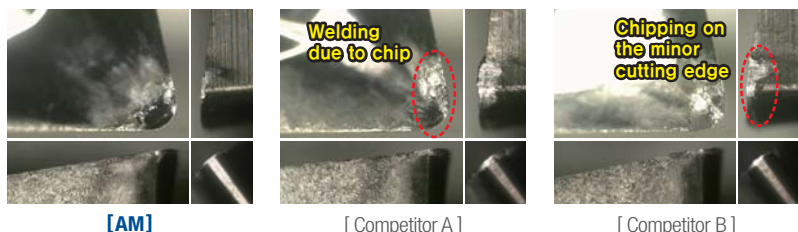
- 1st recommended grade in various cutting conditions including non-ferrous metal cutting
- Enhanced welding resistance by special surface treatment technology



Performance evaluation

Welding and wear resistance

Workpiece	Aluminum (AlZn5.5MgCu)	
Cutting conditions	vc(m/min) = 500, fn(mm/t) = 0.25, ap(mm) = 0.5, wet	
Tools	Insert CCGT09T304-AM (H05)	Holder SCLCR2525-M09

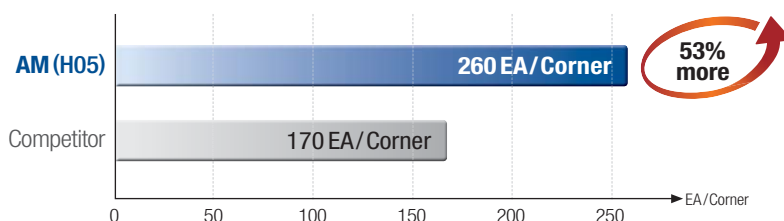


- Sharp cutting edge obtained good surface finish without any welding and chipping on the cutting edge
- Preventing overflowing chips with divided bridge structure

Application examples

Aluminum [Al-Si7Mg(Fe)]

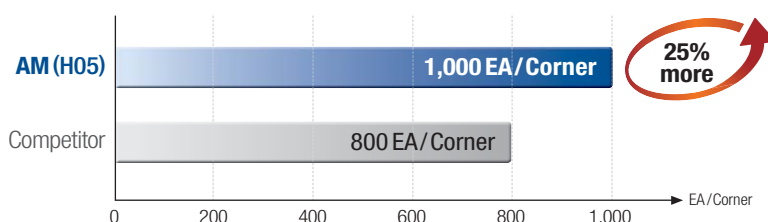
Workpiece use	Aluminum wheel	
Cutting conditions	vc(m/min) = 1,000, fn(mm/rev) = 0.5~0.7, ap(mm) = 2.0~3.0, wet	
Tools	Insert VCGT220530-AM (H05)	Holder S40V-SVQCR-22



- Finishing cutting with good surface finish by stable tool life and chip evacuation in Aluminum medium roughing and heavy interrupted cutting

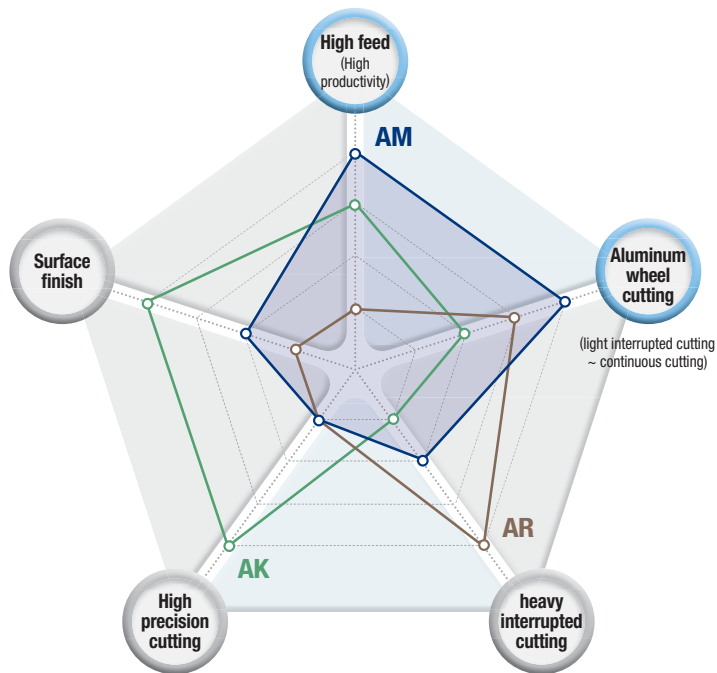
Aluminum [Al-Si7Mg(Fe)]

Workpiece use	Aluminum wheel	
Cutting conditions	vc(m/min) = 560, fn(mm/rev) = 0.3, ap(mm) = 0.5, wet	
Tools	Insert VCGT160408-AM (H05)	Holder S25R-SVQCR-16



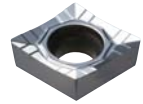
- Stable tool life and chip evacuation in Aluminum wheel journal part finishing

Tool selection guide



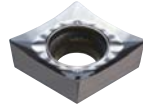
AR

- For heavy interrupted cutting
- High toughness designed applying flat corner cutting edge



AM *New*

- Wide cutting range (light interrupted cutting ~ continuous cutting)
- Good chip evacuation with internal bridge design (high feed cutting)
- Balanced toughness and surface finish from 2 step side rake angle



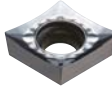
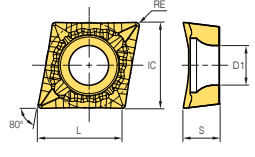
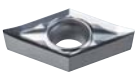
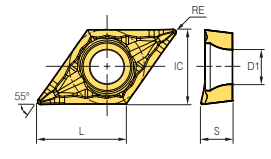

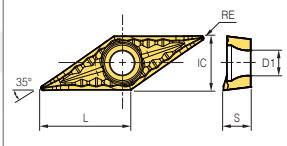

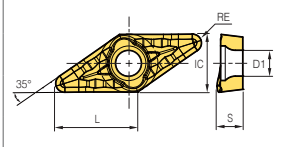
AK

- 1st recommended in Aluminum and non-ferrous metal cutting
- Good surface finish and minimized cutting resistance by applying high rake angle
- High precision cutting



Cutting range	Chip breaker	High feed (High productivity)	Aluminum wheel cutting (light interrupted cutting ~ continuous cutting)	heavy interrupted cutting	High precision cutting	Surface finish (Good surface roughness)
Roughing	AR	★	★★★	★★★★★	★	★
Medium to finishing ~ Medium to roughing	AM <i>New</i>	★★★★★	★★★★★	★★	★	★★
Finishing ~ medium cutting	AK	★★★	★★	★	★★★★★	★★★★★

 Stock items

Picture	Designation	Uncoated		Dimensions (mm)					Cutting condition		Geometries
		H01	H05	L	IC	S	RE	D1	fn (mm/rev)	ap (mm)	
	CCGT 09T302-AM		●	9.672	9.525	3.97	0.2	4.4	0.03~0.25	0.05~3.50	
	09T304-AM		●	9.672	9.525	3.97	0.4	4.4	0.03~0.35	0.10~5.20	
	09T308-AM		●	9.672	9.525	3.97	0.8	4.4	0.03~0.55	0.10~5.50	
	DCGT 11T302-AM		●	11.628	9.525	3.97	0.2	4.4	0.03~0.25	0.05~3.50	
	11T304-AM		●	11.628	9.525	3.97	0.4	4.4	0.03~0.35	0.10~5.20	
	11T308-AM		●	11.628	9.525	3.97	0.8	4.4	0.03~0.55	0.10~5.50	
	VCGT 160402-AM		●	16.606	9.525	4.76	0.2	4.4	0.03~0.25	0.05~3.50	
	160404-AM		●	16.606	9.525	4.76	0.4	4.4	0.03~0.35	0.10~5.20	
	160408-AM		●	16.606	9.525	4.76	0.8	4.4	0.03~0.55	0.10~5.50	
	VCGT 220520-AM		●	22.142	12.7	5.56	20	5.6	0.12~1.00	1.20~7.00	
	220530-AM		●	22.142	12.7	5.56	30	5.6	0.15~1.00	1.20~7.50	

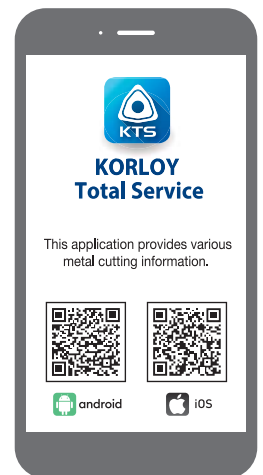
●: Stock item

⚠ For the safe metalcutting

- Use safety supplies such as protective gloves to prevent possible injury while touching the edge of tools.
- Use safety glasses or safety cover to hedge possible dangers. Inappropriate usage or excessive cutting condition may lead tool's breakage or even the fragment's scattering.
- Clamp the workpiece tightly enough to prevent its movement while its machining.
- Properly manage the tool change phase because the inordinately used tool can be easily broken under the excessive cutting load or severe wear, and it may threat the operator's safety.
- Use safety cover because chips evacuated during cutting are hot and sharp and may cause burns and cuts. To remove chips safely, stop machining, put on protective gloves, and use a hook or other tools.
- Prepare for fire prevention measures as the use of the non-water soluble cutting oil may cause fire.
- Use safety cover and other safety supplies because the spare parts or the inserts can be pulled out due to centrifugal force while high speed machining.



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