

Aluminum Series

Aluminum turning chip breaker

AK & AR

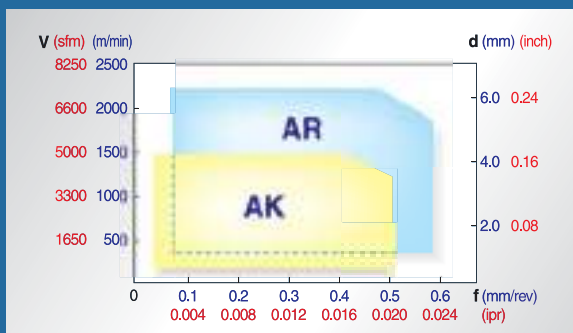
New

Features

- AK C/B with high rake angle and low resistance cutting type secures long tool life in continuous cutting of aluminum turning.
- AR C/B with high stability of cutting edge secures great performance at high speed and intermittent machining.



Application area

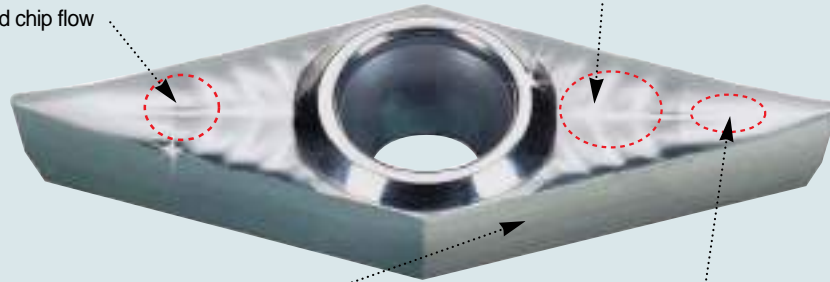


AK & AR

Chip breaker for Aluminum turning

AK C/B

- **Buffed (mirror face) top & rake surface**
 - Low built-up edge & good chip flow



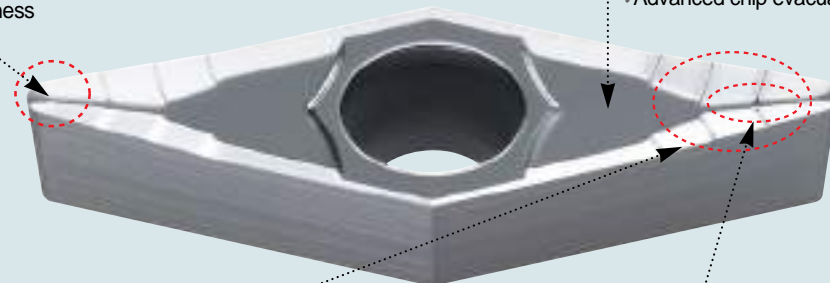
- **Accurate tolerance & high quality surface finish**

- **Wavy & sharp cutting edge**
 - Cutting resistance dispersion
 - Long tool life

- **High & special rake face design**
 - Low cutting resistance
 - Efficient chip breaking & good chip flow

AR C/B New

- **Flat corner edge**
 - Excellent surface roughness
 - Strong cutting edge



- **Specially designed curved surface chip pocket**
 - Excellent chip flow
 - High reliability in high speed machining

- **Buffed surface**
 - Low friction & co-efficient
 - Anti built-up edge
 - Advanced chip evacuation

- **Optimal chip breaker design**
 - Unique step edge line
 - Excellent chip evacuation even in copying & face turning

Comparison of AK & AR application

Category	AK		AR	
Application range	Finish (medium)		Medium & roughing	
Condition	Continuous		Intermittent	
v	Medium speed, High speed of finish		High speed	
	Max. 1500 m/min	Max. 5000 sfm	Max. 2200 m/min	Max. 7300 sfm
f	Max. 0.5 mm/rev	Max. 0.020 ipr	Max 0.6 mm/rev	Max. 0.024 ipr
d	Shallow		Deep	
	Max. 4 mm	Max. 0.16 inch	Max. 6 mm	Max. 0.24 inch

AK & AR

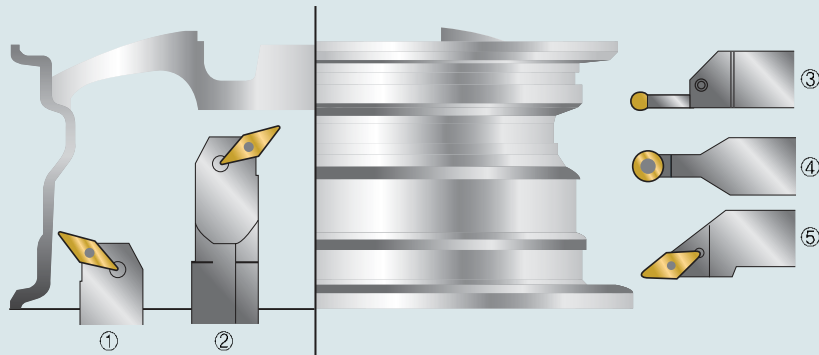
Comparison of AK & AR application | Application examples

Comparison of AK & AR application

Grade	Features	Note
H01	Uncoated carbide + buffed top face H01 is exclusively uncoated carbide for aluminum turning and milling operation. H01 guarantees excellent performance due to its mirroring surface and AK, AR chip breaker.	
ND1000	Diamond coating ND 1000 grade can be applied to aluminum alloy which contains 7~14% silicon. ND 1000 guarantees 10 times longer tool life than uncoated carbide grade.	
PD1000	DLC(Diamond Like Carbon) PD 1000 grade can be applied to aluminum alloy which contains 1~7% silicon. PD 1000 guarantees 10 times longer tool life and better surface roughness than uncoated carbide grade.	
PC230	PVD(TiAlN) coating PC230 has ideal combination of special substrate and PVD(TiAlN) coating.	

Application examples

	Material	Insert designation	Cutting condition			Result
			V	f	sfm	Unit : pieces / corner
	Cap (Al-Si alloy)	CCGT 09T308-AK 32.52-AK	V	500 m/min	1650 sfm	
		H01	f	0.16 mm/rev	0.0064 ipr	
		H01	d	2.0 mm	0.08 inch	
	Piston (Aluminum)	VCGT 160404-AK 331-AK	V	120 m/min	400 sfm	
		H01	f	0.15 mm/rev	0.006 ipr	
		H01	d	1.5 mm	0.06 inch	
	Aluminum wheel	VCGT 160408-AR 332-AR	V	2200 m/min	7260 sfm	
		H01	f	0.25 mm/rev	0.01 ipr	
		H01	d	2.0 mm	0.08 inch	



● Insert application

① VCGT1103□□-AK
④ RCGT10T3M0-AK

② VCGT1604□□-AR
⑤ VCGT2205□□-AK

③ MRGN□□□-A

AK & AR list and recommended cutting condition

Designation		AK							AR								
ISO	ASA	Available grade				Cutting condition (grade : H01)				Available grade				Cutting condition (grade : H01)			
		H01	ND1000	PD1000	PC230	f (mm/rev)	D.O.C (mm)	f (ipr)	D.O.C (inch)	H01	ND1000	PD1000	PC230	f (mm/rev)	D.O.C (mm)	f (ipr)	D.O.C (inch)
CCGT060202-□□	21.50.5	●	○	○		0.10(0.05-0.25)	1.0(0.3-2.5)	0.004(0.002-0.01)	0.04(0.012-0.1)								
CCGT060204-□□	21.51	●	○	○		0.10(0.05-0.25)	1.0(0.3-2.5)	0.004(0.002-0.01)	0.04(0.012-0.1)								
CCGT060208-□□	21.52	●	○	○		0.10(0.05-0.25)	1.0(0.3-2.5)	0.004(0.002-0.01)	0.04(0.012-0.1)								
CCGT09T302-□□	32.50.5	●	○	○		0.10(0.05-0.25)	1.0(0.3-3.5)	0.004(0.002-0.01)	0.04(0.012-0.14)								
CCGT09T304-□□	32.51	●	○	○		0.15(0.05-0.25)	1.0(0.3-3.5)	0.006(0.002-0.01)	0.04(0.012-0.14)	●	○	○		0.15(0.05-0.30)	1.0(0.3-4.0)	0.006(0.002-0.012)	0.04(0.012-0.16)
CCGT09T308-□□	32.52	●	○	○		0.15(0.05-0.25)	1.0(0.3-3.5)	0.006(0.002-0.01)	0.04(0.012-0.14)	●	○	○		0.15(0.05-0.30)	1.0(0.3-4.0)	0.006(0.002-0.012)	0.04(0.012-0.16)
CCGT120402-□□	430.5	●	○	○		0.15(0.05-0.25)	1.0(0.3-6.0)	0.006(0.002-0.01)	0.04(0.012-0.24)								
CCGT120404-□□	431	●	○	○		0.15(0.05-0.25)	1.5(0.3-6.0)	0.006(0.002-0.01)	0.06(0.012-0.24)	●	○	○		0.15(0.05-0.30)	1.5(0.5-7.0)	0.006(0.002-0.012)	0.06(0.02-0.28)
CCGT120408-□□	432	●	○	○		0.15(0.05-0.30)	1.5(0.3-6.0)	0.006(0.002-0.012)	0.06(0.012-0.24)	●	○	○		0.20(0.05-0.40)	1.5(0.5-7.0)	0.008(0.002-0.016)	0.06(0.02-0.28)
CCGT120412-□□	433	●	○	○		0.15(0.05-0.35)	1.0(0.3-6.0)	0.006(0.002-0.014)	0.04(0.012-0.24)	●	○	○		0.20(0.05-0.50)	1.5(0.5-6.0)	0.008(0.002-0.02)	0.06(0.02-0.24)
DCGT070202-□□	21.50.5	●	○	○		0.15(0.05-0.25)	1.0(0.3-4.0)	0.006(0.002-0.01)	0.04(0.012-0.16)	●	○	○		0.15(0.05-0.30)	1.5(0.5-4.5)	0.006(0.002-0.012)	0.06(0.02-0.18)
DCGT070204-□□	21.51	●	○	○		0.15(0.05-0.25)	1.0(0.3-4.0)	0.006(0.002-0.01)	0.04(0.012-0.16)	●	○	○		0.15(0.05-0.30)	1.5(0.5-4.5)	0.006(0.002-0.012)	0.06(0.02-0.18)
DCGT070208-□□	21.52	●	○	○		0.15(0.05-0.25)	1.0(0.3-4.0)	0.006(0.002-0.01)	0.04(0.012-0.16)								
DCGT11T302-□□	32.50.5	●	○	○		0.15(0.05-0.25)	1.0(0.3-5.0)	0.006(0.002-0.01)	0.04(0.012-0.2)	●	○	○		0.15(0.05-0.30)	1.5(0.5-5.0)	0.006(0.002-0.012)	0.06(0.02-0.2)
DCGT11T304-□□	32.51	●	○	○		0.15(0.05-0.25)	1.0(0.3-5.0)	0.006(0.002-0.01)	0.04(0.012-0.2)	●	○	○		0.15(0.05-0.30)	1.5(0.5-5.50)	0.006(0.002-0.012)	0.06(0.02-0.22)
DCGT11T308-□□	32.52	●	○	○		0.15(0.05-0.25)	1.0(0.3-5.0)	0.006(0.002-0.01)	0.04(0.012-0.2)	●	○	○		0.20(0.05-0.40)	1.5(0.5-5.50)	0.008(0.002-0.016)	0.06(0.02-0.22)
DCGT11T312-□□	32.53	●	○	○		0.15(0.05-0.25)	1.0(0.3-5.0)	0.006(0.002-0.01)	0.04(0.012-0.2)	●	○	○		0.20(0.05-0.45)	1.5(0.5-5.50)	0.008(0.002-0.018)	0.06(0.02-0.22)
RCGT0602M0-□□		●	○	○		0.30(0.10-0.80)	1.0(0.3-3.3)	0.012(0.004-0.032)	0.04(0.012-0.132)								
RCGT0803M0-□□		●	○	○		0.35(0.10-1.00)	1.5(0.7-3.3)	0.014(0.004-0.04)	0.06(0.028-0.132)								
RCGT1003M0-□□		●	○	○		0.4(0.20-1.30)	2.0(0.9-4.0)	0.016(0.008-0.052)	0.08(0.036-0.16)	●	○	○		0.4(0.20-1.30)	2.0(0.9-4.0)	0.016(0.008-0.052)	0.08(0.036-0.16)
RCGT10T3M0-□□		●	○	○		0.4(0.20-1.30)	2.0(0.9-4.0)	0.016(0.008-0.052)	0.08(0.036-0.16)	●	○	○		0.4(0.20-1.30)	2.0(0.9-4.0)	0.016(0.008-0.052)	0.08(0.036-0.16)
RCGT1204M0-□□		●	○	○		0.5(0.25-1.5)	2.0(1.0-5.0)	0.02(0.01-0.06)	0.08(0.04-0.2)	●	○	○		0.5(0.25-1.5)	2.0(1.0-5.0)	0.02(0.01-0.06)	0.08(0.04-0.2)
SCGT09T304-□□	32.51	●	○	○		0.20(0.10-0.30)	1.5(0.5-4.0)	0.008(0.004-0.012)	0.06(0.02-0.16)	●	○	○		0.20(0.10-0.35)	1.5(0.5-4.5)	0.008(0.004-0.014)	0.06(0.02-0.18)
SCGT09T308-□□	32.52	●	○	○		0.20(0.10-0.30)	1.5(0.5-4.0)	0.008(0.004-0.012)	0.06(0.02-0.16)	●	○	○		0.20(0.10-0.35)	1.5(0.5-5.0)	0.008(0.004-0.014)	0.06(0.02-0.2)
SCGT120404-□□	431	●	○	○		0.20(0.10-0.35)	1.5(0.5-4.0)	0.008(0.004-0.014)	0.06(0.02-0.16)	●	○	○		0.20(0.10-0.35)	1.5(0.5-5.5)	0.008(0.004-0.014)	0.06(0.02-0.22)
SCGT120408-□□	432	●	○	○		0.20(0.10-0.40)	1.5(0.5-6.0)	0.008(0.004-0.016)	0.06(0.02-0.24)	●	○	○		0.20(0.10-0.50)	1.5(0.5-7.0)	0.008(0.004-0.02)	0.06(0.02-0.28)
SCGT120416-□□	434	●	○	○		0.40(0.80-1.00)	1.5(0.5-6.0)	0.016(0.032-0.04)	0.06(0.02-0.24)								
TCGT090202-□□	1.81.50.5	●	○	○		0.10(0.05-0.25)	1.0(0.3-3.0)	0.004(0.002-0.01)	0.04(0.012-0.12)	●	○	○		0.10(0.05-0.25)	1.0(0.3-3.0)	0.004(0.002-0.01)	0.04(0.012-0.12)
TCGT090204-□□	1.81.51	●	○	○		0.10(0.05-0.25)	1.0(0.3-3.0)	0.004(0.002-0.01)	0.04(0.012-0.12)	●	○	○		0.10(0.05-0.25)	1.0(0.3-3.0)	0.004(0.002-0.01)	0.04(0.012-0.12)
TCGT110202-□□	21.50.5	●	○	○		0.15(0.05-0.25)	1.0(0.3-4.0)	0.006(0.002-0.01)	0.04(0.012-0.16)	●	○	○		0.15(0.05-0.25)	1.0(0.3-4.0)	0.006(0.002-0.01)	0.04(0.012-0.16)
TCGT110204-□□	21.51	●	○	○		0.20(0.10-0.30)	1.5(0.5-4.0)	0.008(0.004-0.012)	0.06(0.02-0.16)	●	○	○		0.20(0.10-0.35)	1.5(0.5-4.0)	0.008(0.004-0.014)	0.06(0.02-0.16)
TCGT110208-□□	21.52	●	○	○		0.25(0.10-0.40)	1.5(0.5-4.0)	0.01(0.004-0.016)	0.06(0.02-0.16)	●	○	○		0.25(0.10-0.40)	1.5(0.5-4.0)	0.01(0.004-0.016)	0.06(0.02-0.16)
TCGT16T302-□□	32.50.5	●	○	○		0.15(0.05-0.25)	1.0(0.3-6.0)	0.006(0.002-0.01)	0.04(0.012-0.24)								
TCGT16T304-□□	32.51	●	○	○		0.20(0.10-0.30)	1.5(0.5-6.0)	0.008(0.004-0.012)	0.06(0.02-0.24)	●	○	○		0.20(0.10-0.40)	1.5(0.5-7.0)	0.008(0.004-0.016)	0.06(0.02-0.28)
TCGT16T308-□□	32.52	●	○	○		0.30(0.10-0.45)	1.5(0.8-6.0)	0.012(0.004-0.018)	0.06(0.032-0.24)	●	○	○		0.30(0.10-0.50)	1.5(0.8-7.0)	0.012(0.004-0.02)	0.06(0.032-0.28)
TCGT16T312-□□	32.53	●	○	○		0.30(0.10-0.70)	1.5(0.8-6.0)	0.012(0.004-0.028)	0.06(0.032-0.24)								
TCGT16T316-□□	32.54	●	○	○		0.40(0.10-1.0)	1.5(0.8-5.0)	0.016(0.004-0.04)	0.06(0.032-0.2)								
VBGT110302-□□	220.5	●	○	○		0.15(0.05-0.25)	1.0(0.3-3.5)	0.006(0.002-0.01)	0.04(0.012-0.14)	●	○	○		0.15(0.05-0.27)	1.0(0.3-3.5)	0.006(0.002-0.011)	0.04(0.012-0.14)
VBGT110304-□□	221	●	○	○		0.20(0.10-0.30)	1.5(0.5-3.5)	0.008(0.004-0.012)	0.06(0.02-0.14)	●	○	○		0.20(0.10-0.35)	1.5(0.5-3.5)	0.008(0.004-0.014)	0.06(0.02-0.14)
VBGT110308-□□	222	●	○	○		0.30(0.15-0.45)	1.5(0.5-3.5)	0.012(0.006-0.018)	0.06(0.02-0.14)	●	○	○		0.30(0.15-0.50)	1.5(0.5-4.0)	0.012(0.006-0.02)	0.06(0.02-0.16)
VBGT160402-□□	330.5	●	○	○		0.15(0.05-0.25)	1.0(0.3-5.0)	0.006(0.002-0.01)	0.04(0.012-0.2)	●	○	○		0.15(0.05-0.30)	1.0(0.3-5.0)	0.006(0.002-0.012)	0.04(0.012-0.2)
VBGT160404-□□	331	●	○	○		0.20(0.10-0.30)	1.5(0.5-5.0)	0.008(0.004-0.012)	0.06(0.02-0.2)	●	○	○		0.20(0.10-0.35)	1.5(0.5-6.0)	0.008(0.004-0.014)	0.06(0.02-0.24)
VBGT160408-□□	332	●	○	○		0.30(0.15-0.50)	1.5(0.5-5.0)	0.012(0.006-0.02)	0.06(0.02-0.2)	●	○	○		0.30(0.15-0.50)	1.5(0.5-6.0)	0.012(0.006-0.02)	0.06(0.02-0.24)
VBGT160412-□□	333	●	○	○		0.40(0.15-0.80)	1.5(0.5-5.0)	0.016(0.006-0.032)	0.06(0.02-0.2)	●	○	○		0.40(0.15-1.00)	1.5(0.5-5.5)	0.016(0.006-0.04)	0.06(0.02-0.22)
VCGT110302-□□	220.5	●	○	○		0.15(0.05-0.25)	1.0(0.3-3.5)	0.006(0.002-0.01)	0.04(0.012-0.14)	●	○	○		0.15(0.05-0.27)	1.0(0.3-3.5)	0.006(0.002-0.011)	0.04(0.012-0.14)
VCGT110304-□□	221	●	○	○		0.20(0.10-0.30)	1.5(0.5-3.5)	0.008(0.004-0.012)	0.06(0.02-0.14)	●	○	○		0.20(0.10-0.35)	1.5(0.5-3.5)	0.008(0.004-0.014)	0.06(0.02-0.14)
VCGT110308-□□	222	●	○	○		0.30(0.15-0.45)	1.5(0.5-3.5)	0.012(0.006-0.018)	0.06(0.02-0.14)	●	○	○		0.30(0.15-0.50)	1.5(0.5-4.0)	0.012(0.006-0.02)	0.06(0.02-0.16)
VCGT130302-□□	2.520.5	●	○	○		0.15(0.05-0.25)	1.0(0.3-3.5)	0.006(0.002-0.01)	0.04(0.012-0.14)	●	○	○		0.15(0.05-0.25)	1.0(0.3-4.0)	0.006(0.002-0.01)	0.04(0.012-0.16)
VCGT130304-□□	2.521	●	○	○		0.20(0.10-0.30)	1.5(0.5-3.5)	0.008(0.004-0.012)	0.06(0.02-0.14)	●	○	○		0.20(0.10-0.35)	1.5(0.5-4.0)	0.008(0.004-0.014)	0.06(0.02-0.16)
VCGT130308-□□	2.522	●	○	○		0.30(0.15-0.45)	1.5(0.5-4.0)	0.012(0.006-0.018)	0.06(0.02-0.16)	●	○	○		0.30(0.15-0.45)	1.5(0.5-4.0)	0.012(0.006-0.018)	0.06(0.02-0.16)
VCGT160402-□□	330.5	●	○	○		0.15(0.05-0.25)	1.0(0.3-5.0)	0.006(0.002-0.01)	0.04(0.012-0.2)	●	○	○		0.15(0.05-0.30)	1.0(0.3-5.0)	0.006(0.002-0.012)	0.04(0.012-0.2)
VCGT160404-□□	331	●	○	○		0.20(0.10-0.30)	1.5(0.5-5.0)	0.008(0.004-0.012)	0.06(0.02-0.2)	●	○	○		0.20(0.10-0.35)	1.5(0.5-6.0)	0.008(0.004-0.014)	0.06(0.02-0.24)
VCGT160408-□□	332	●	○	○		0.30(0.15-0.50)	1.5(0.5-5.0)	0.012(0.006-0.02)	0.06(0.02-0.2)	●	○	○		0.30(0.15-0.50)	1.5(0.5-6.0)	0.012(0.006-0.02)	0.06(0.02-0.24)
VCGT160412-□□	333	●	○	○		0.40(0.15-0.80)	1.5(0.5-5.0)	0.016(0.006-0.032)	0.06(0.02-0.2)	●	○	○		0.40(0.15-1.00)	1.5(0.5-5.5)	0.016(0.006-0.04)	0.06(0.02-0.22)
VCGT220525-□□	43.56.3	●	○	○		0.40(0.20-1.00)	1.5(0.8-8.0)	0.016(0.008-0.04)	0.06(0.032-0.32)	●	○	○		0.50(0.20-1.5)	1.5(1.0-8.0)	0.02(0.008-0.06)	0.06(0.04-0.32)
VCGT220530-□□	43.57.6	●	○	○		0.45(0.20-1.2)	1.5(0.8-8.0)	0.018(0.008-0.048)	0.06(0.032-0.32)	●	○	○		0.50(0.20-1.5)	1.5(1.0-8.0)	0.02(0.008-0.06)	0.06(0.04-0.32)

* Order-made items are available.

● Stock item, ○ Under preparing for stock

