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TECH-NEWS

Aero-Mill Plus

High Speed Milling Tool with PCD Blade

High speed milling tool with advanced PCD coated blades for non ferrous metals such as aluminum alloy

- **Coolant System**
  Improves tool life and enables stable chip control by direct coolant injection to blades.
- **Chip Cover-Blade Integrated Type**
  A simplified clamping structure extends the number of applicable edges for high speed and high feed milling.

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Cutter

PCD Blade

Increased Productivity and Extended Tool Life

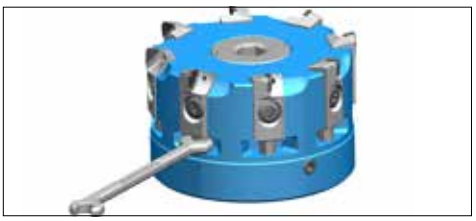
due to Shortened Setting Time and Direct Coolant Injection

The Aero-Mill blade type is built to respond to the automotive industry's growing shift towards using non-ferrous metals such as aluminum to develop lightweight products.
Take how the good old spanner is used as an example. The latest innovation allows for increased convenience and dexterity in using the spanner for adjustment in dim environments as well as increased rotation angle with operator-centered approach.

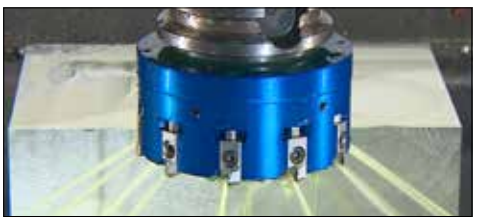
In addition, compared to the previous methods, the components of the current model are simplified while simultaneously increasing the maximum applicable corners to ensure a range of 40%~50% reduction of setting time when adjusting the blade height.
In order to eliminate the potential risk factors following the simplification of components, the structure is supplemented to prevent the blades from falling off in the cutter rotational direction in case of clamping screw breakage. And Aero-Mill Plus blades have been rebuilt to moderately float up and down only in the vertical direction of cutter.

Aero-Mill Plus also has integrated chip covers and blades. To improve chip interference on the chip cover and PCD tool life, a direct spraying system is applied producing a max. 20% increased life.

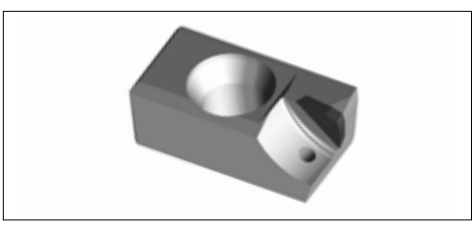
Aero Mill Plus Features



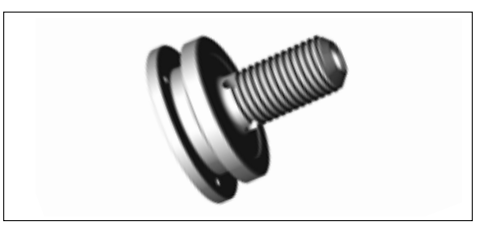
■ **Spanner adjustable system**
- Spanner adjustable system for 1㎛
- Setting time 40% save



■ **Direct coolant system**
- Improve tool life by directing coolant to cutting blades



■ **Blade with simple clamping system**
- No chip cover
- High pitch available

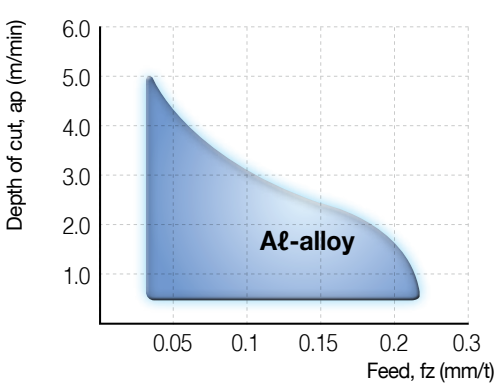


■ **Light coolant bolt**
- Exclusive light coolant bolt
- Tool weight 30% save

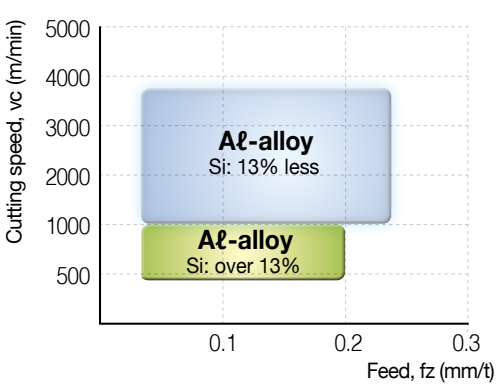
Code System

A	P	D	M	300	R	-	PB	12Z
Aero-Mill Plus			Metric type	Diameter (Ø)	Hand (R/L)		Aero-Mill Plus blade type	Number of tooth

Application Range



Recommended Cutting Speed



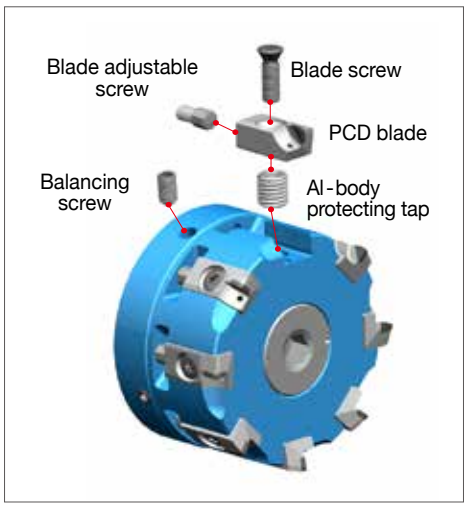
Max. RPM

Diameter (mm)	Ø80	Ø100	Ø125	Ø160	Ø200	Ø250	Ø315
Max. revolution (rpm)	20.000	18.000	16.000	13.000	10.000	8.000	7.000

Aero-Mill Plus

Structure of Aero-Mill Plus

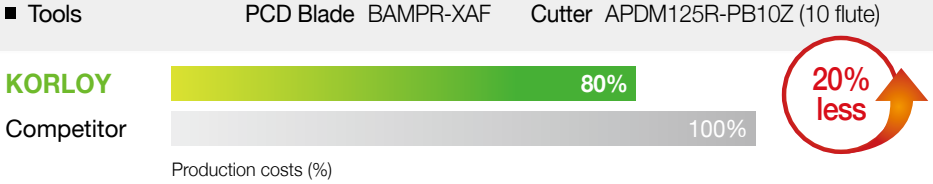
- Prevent overload to the spindle bearings through weight reduction of the Aℓ alloy body and enable high-speed processing.
- Provide PCD Blade-dedicated cutter design to offer stable tool life and increase of applied blades.
- Improve the blade life by applying a coolant system that enables direct spray cooling to cutting blades.
- Adopt a clamping method with simple structure without a set screw
- Reduce weight and apply a coolant bolt that is exclusively used for Aero-Mill Plus that applies coolant to remove internal chip.



Cutting Performance

Alloyed aluminum (ADC12)

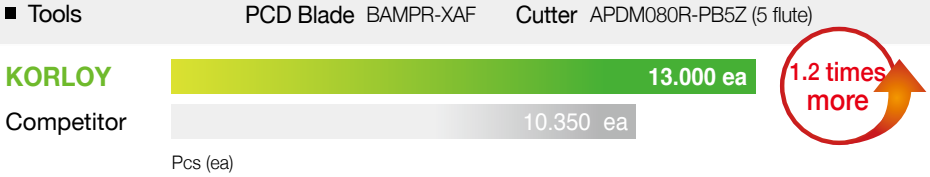
- Workpiece: Automotive ladder frame
- Application area: Facing
- Cutting conditions: vc(m/min) = 2.356 / fz(mm/min) = 0.042 / ap(mm) = 1(Main side) - 4(Projecting part)
  wet (Internal and external coolant)
- Tools: PCD Blade BAMPR-XAF Cutter APDM125R-PB10Z (10 flute)



➔ 20% reduced production cost than competitor's

Alloyed aluminum (ADC12)

- Workpiece: Automotive timing cover
- Application area: Facing
- Cutting conditions: vc(m/min) = 1.760 / fz(mm/min) = 0.052 / ap(mm) = 1(Main side) - 4(Projecting part)
  wet (through coolant)
- Tools: PCD Blade BAMPR-XAF Cutter APDM080R-PB5Z (5 flute)

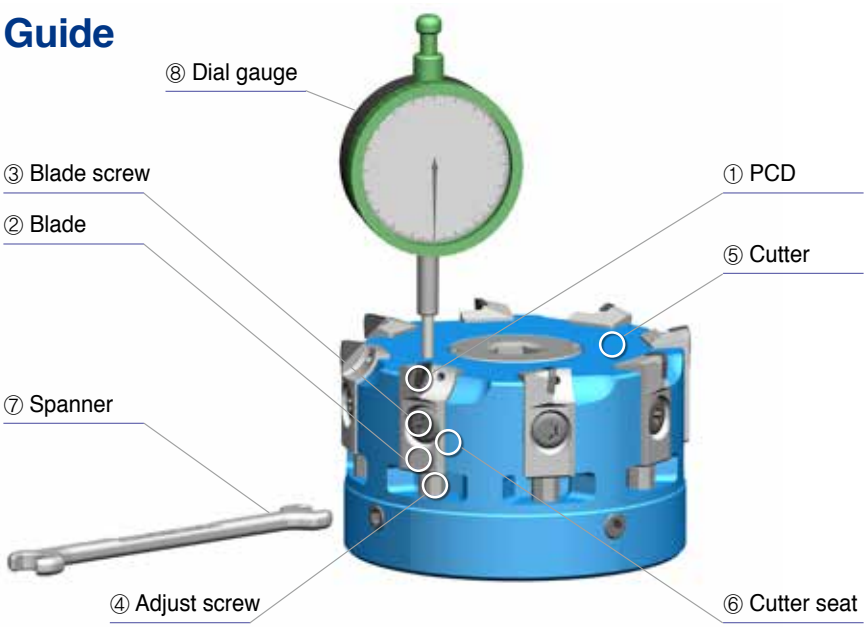


➔ 1.2 times longer tool life than competitor's

Coolant Parts

Dimensions (mm)	Type	Designation	Shape	Material	Note
Ø80	Coolant bolt	CB12-AMP80M		Steel	Included
Ø100		CB16-AMP100M			
Ø125		CB20-AMP125M			
Ø160		CB20-AMP125M			
Ø200	Coolant cover	CCV-AMP200M		Aluminum	Extra charge
Ø250		CCV-AMP250M			
Ø315		CCV-AMP315M			

User Guide



[Notice]

- Please use OHP film to protect PCD blade when you adjust tolerance.

  It can cause chipping during adjusting run-out.

- Please rotate the adjust screw to right direction only.

  When you exceed zero tolerance, should release cartridge screw first and rotate adjust screw to left direction, then rotate it to right and adjust again.

How to Assemble the Aero-Mill Plus

1. Place ④ Adjust screw in ⑥ Cutter Seat
2. Insert ② Blade to ④ Adjust screw in ⑥ Cutter Seat
   (Fasten vertically, since screwing horizontally is not possible.)
3. Place ④ Adjust screw in ⑥ Cutter Seat
4. Disassembly is performed in reverse order of the assembly.

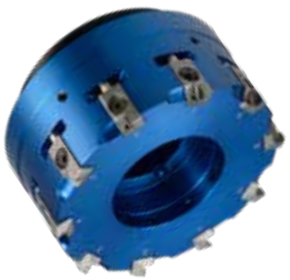
How to Adjust the Run-out on the Aero-Mill Plus

1. Clean the measuring instrument and set the position of the Aero-Mill cutter.
2. Release ③ Blade screw first, then joint slightly by 2Nm.
3. Rotate the ④ Adjust screw right direction and adjust it up to -20μ (dial gage).
4. Joint ③ Blade screw tightly by 10Nm.
5. Adjust it to the zero tolerance by rotating ④ Adjust screw to the right direction.

* When you rotate ④ Adjust screw to the right direction, blades move to upper direction.

APDM-PB

AA 90°



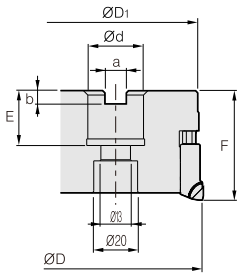


Fig. 1

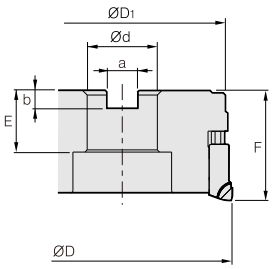


Fig. 2

(mm)

Designation		Stock L	Stock R	⊚	Max ⊚	ØD	ØD1	Ød	a	b	E	F	ap	kg	Fig.
APDM-PB	080-PB6Z	○	●	6	10	80	77	27	12.4	7	23.5	50	5	0.55	1
	080-PB8Z	○	●	8	10	80	77	27	12.4	7	23.5	50	5	0.55	1
	100-PB6Z	○	●	6	12	100	97	32	14.4	8	32	50	5	0.92	2
	100-PB8Z	○	●	8	12	100	97	32	14.4	8	32	50	5	0.92	2
	125-PB8Z	○	●	8	14	125	122	40	16.4	9	35	63	5	1.9	2
	125-PB10Z	○	●	10	14	125	122	40	16.4	9	35	63	5	1.9	2
	160-PB10Z	○	●	10	20	160	157	40	16.4	9	35	63	5	3.3	2
	160-PB12Z	○	●	12	20	160	157	40	16.4	9	35	63	5	3.3	2

Available PCD Blades

BAMPR-XAF

BAMPR-XAW

BAMPR-XAWR

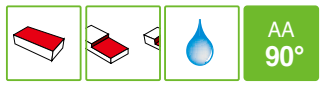
Designation		Application	PCD	Application range	
			DP200	Finish machining	Rough machining
BAMPR	XAF	Facing	●	△	○
	XAW	Wiper (Flat)	●	○	X
	XAWR	Wiper (Radius)	●	○	X

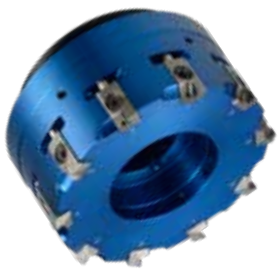
○ : Suitable, △ : Available, X : Not applicable

Parts

Specification	Blade screw	Blade adjustable screw	Al-body protecting tap	Balancing screw	Wrench for insert	Wrench for cartridge
Ø3 ~ Ø6	ETKA0620	AZ0514-SPN6	UZD1010	KHE0610	SPN-6	TW25-100

APDM-PB





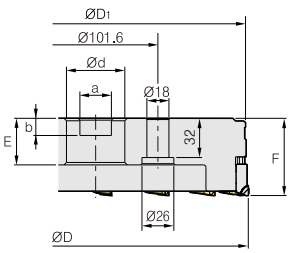


Fig. 3

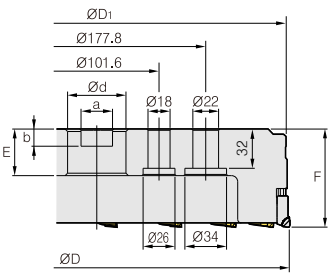


Fig. 4

(mm)

Designation		Stock L	Stock R	⊙	Max ⊙	ØD	ØD1	Ød	a	b	E	F	ap	kg	Fig.
APDM-PB	200-PB12Z	O	O	12	26	200	197	60	25.7	14	40	63	5	4.0	3
	250-PB16Z	O	O	16	32	250	247	60	25.7	14	40	63	5	6.5	3
	315-PB18Z	O	O	18	42	315	312	60	25.7	14	40	63	5	11.3	4

Available PCD Blades

BAMPR-XAF

BAMPR-XAW

BAMPR-XAWR

Designation		Application	PCD	Application range	
			DP150	Finish machining	Rough machining
BAMPR	XAF	Facing	●	△	○
	XAW	Wiper (Flat)	●	○	X
	XAWR	Wiper (Radius)	●	○	X

○ : Suitable, △ : Available, X : Not applicable

Parts

Specification	Blade screw	Blade adjustable screw	Al-body protecting tap	Balancing screw	Wrench for insert	Wrench for cartridge
Ø8 ~ Ø12	ETKA0620	AZ0514-SPN6	UZD1010	KHE0610	SPN-6	TW25-100

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