

High speed aluminum milling tool

Aero-Mill Plus⁺



High speed milling tool with PCD blade

- Improve tool life up to 20% with a coolant system that enables direct spray cooling to cutting blades.
- Enable high feed milling by increasing the number of cutting blades by 20% through a simply structured coupling method for clamps
- Reduce setting time up to 40% by applying a spanner adjustment method
- Introduce an aluminum cutter body to provide a superior cutting performance during high speed milling.



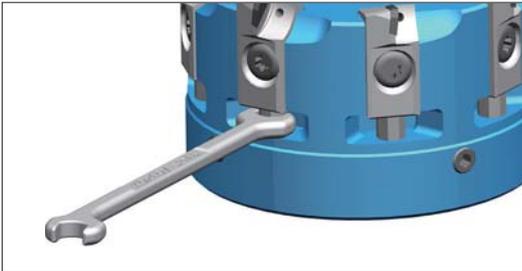
Aero-Mill Plus⁺

High speed milling tool with PCD blade

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Features

■ Spanner adjustable system



- Spanner adjustable system for 1 μ m
- 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

Improve tool life up to 20% through direct spray cooling and enhance productivity through reduced setting time

In the case of the adjustment method for conventional blades, inserting a wrench into the small groove of the adjustment screw for fine-tuning made it difficult for operators to adjust in dark environments, such as at night. The wrench that fits to the small groove also has weak stiffness, thus making it easy to become bent.

As a result, the concept of a spanner was introduced to allow for more convenient adjustment to ensure easy adjustment in dark environments and increase the rotation angle with an operator-centered approach.

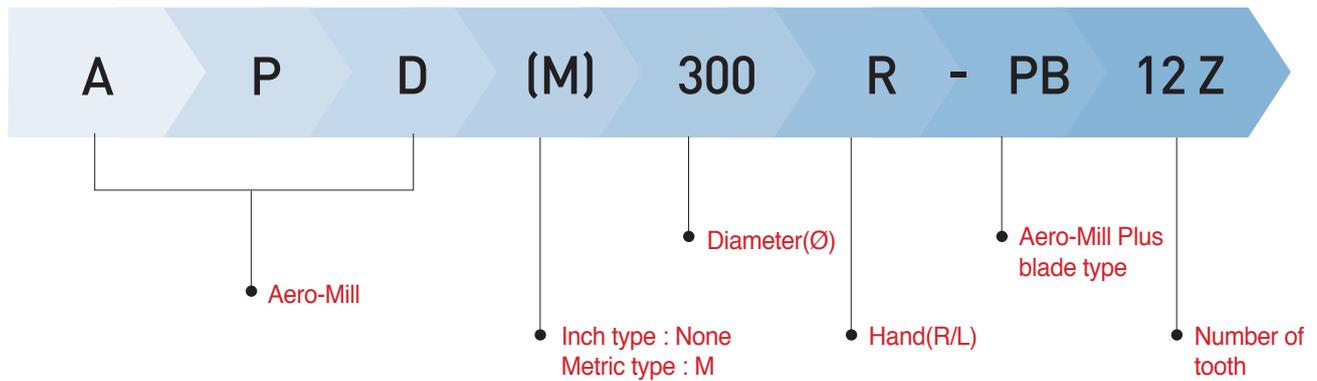
In addition, components were simplified, securing the maximum number of blades for productivity improvement. This resulted in up to 40% reduction of setting time compared to the previous method.

Aside from this, in order to address risks following the simplification of components, the structure was supplemented to prevent the blades from departing in the cutter rotational direction in the event of damages that may have occurred on the screws for fastening blades or other problems, while it was rebuilt to flow up and down with the direction of the cutter.

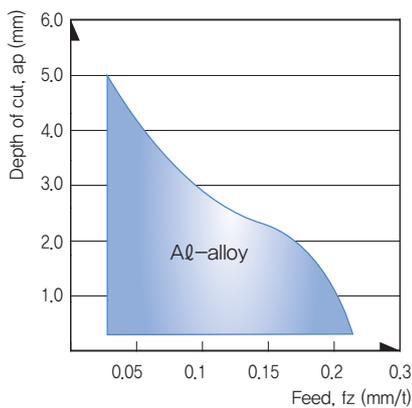
Aero-Mill Plus integrated the chip cover and the blade. To improve the chip interference on the chip cover and PCD life, a direct application system was applied, and it increased the life of the cutter by up to 20%.



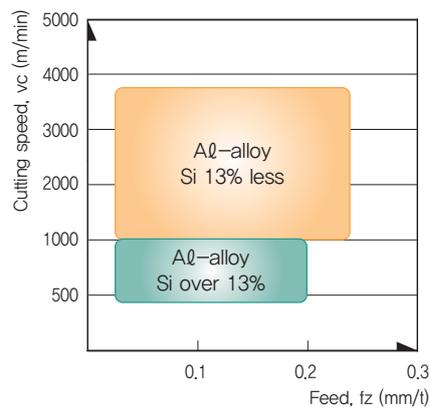
Code system



Application range



Recommended cutting speed

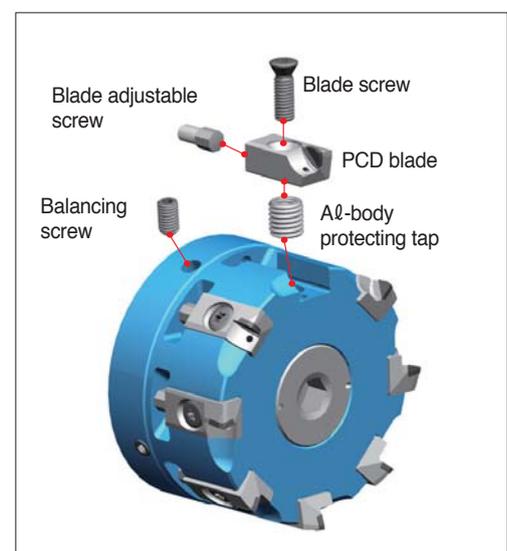


Max. RPM

| Diameter (mm) | Max. revolution (rpm) |
|---------------|-----------------------|
| Ø80 | 20,000 |
| Ø100 | 18,000 |
| Ø125 | 16,000 |
| Ø160 | 13,000 |
| Ø200 | 10,000 |
| Ø250 | 8,000 |
| Ø315 | 7,000 |

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 set screw.
- Reduce weight and apply a coolant bolt that is exclusively used for Aero-Mill Plus that applies coolant to remove internal chip.



Aero-Mill Plus⁺

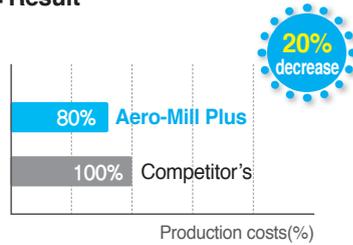


Cutting Performance

N 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)

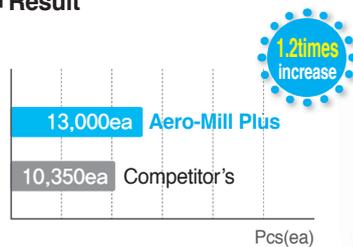
Result



N 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)

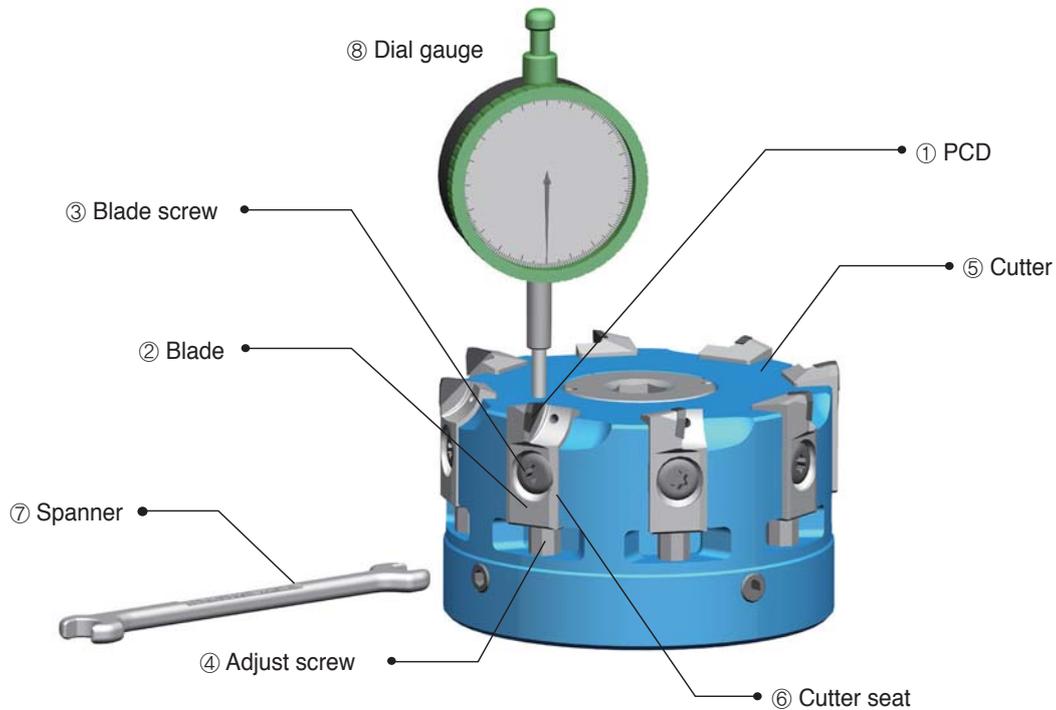
Result



Coolant parts

| Diameter (mm) | Type | inch / mm | Designation | Shape | Material | Note |
|---------------|---------------|--------------|--------------|-------|----------|--------------|
| Ø80 | Coolant bolt | inch, mm | CB12-AMP80 | | Steel | Included |
| Ø100 | | inch | CB16-AMP100 | | | |
| | | mm | CB16-AMP100M | | | |
| Ø125 | | inch | CB20-AMP125 | | | |
| | | mm | CB20-AMP125M | | | |
| Ø160 | | inch | CB24-AMP160 | | | |
| | mm | CB20-AMP125M | | | | |
| Ø200 | Coolant cover | inch, mm | CCV-AMP200 | | Aluminum | Extra charge |
| Ø250 | | inch, mm | CCV-AMP250 | | | |
| Ø315 | | inch, mm | CCV-AMP315 | | | |

User guide



🎯 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. Insert ③ Blade screw and joint right direction by 10Nm.
4. Disassembly is performed in reverse order of the assembly.

🎯 How to adjust run-out of 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.

🎯 Notice

1. Please use OHP film to protect PCD blade when you adjust tolerance.
It can cause chipping during adjusting run-out.
2. 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.

Aero-Mill Plus⁺



APD(M)-PB

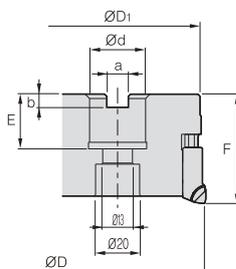
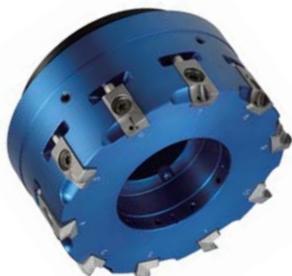


Fig. 1

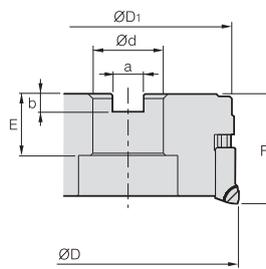


Fig. 2

(mm)

| Designation | | Max | ØD | ØD1 | Ød | a | b | E | F | ap | | Fig. | |
|-------------|--------------|-----|----|-----|-----|-----------|------------|-------|--------|----|---|------|---|
| APD(M)-PB | 080R/L-PB6Z | 6 | 10 | 80 | 77 | 25.4(27) | 9.5(12.4) | 6(7) | 23.5 | 50 | 5 | 0.55 | 1 |
| | 080R/L-PB8Z | 8 | 10 | 80 | 77 | 25.4(27) | 9.5(12.4) | 6(7) | 23.5 | 50 | 5 | 0.55 | 1 |
| | 100R/L-PB6Z | 6 | 12 | 100 | 97 | 31.75(32) | 12.7(14.4) | 8 | 34(32) | 50 | 5 | 0.92 | 2 |
| | 100R/L-PB8Z | 8 | 12 | 100 | 97 | 31.75(32) | 12.7(14.4) | 8 | 34(32) | 50 | 5 | 0.92 | 2 |
| | 125R/L-PB8Z | 8 | 14 | 125 | 122 | 38.1(40) | 15.9(16.4) | 10(9) | 40(35) | 63 | 5 | 1.9 | 2 |
| | 125R/L-PB10Z | 10 | 14 | 125 | 122 | 38.1(40) | 15.9(16.4) | 10(9) | 40(35) | 63 | 5 | 1.9 | 2 |
| | 160R/L-PB10Z | 10 | 20 | 160 | 157 | 50.8(40) | 19.0(16.4) | 11(9) | 41(35) | 63 | 5 | 3.3 | 2 |
| | 160R/L-PB12Z | 12 | 20 | 160 | 157 | 50.8(40) | 19.0(16.4) | 11(9) | 41(35) | 63 | 5 | 3.3 | 2 |

() Metric size

Available PCD blades

BAMPR-XAF



BAMPR-XAW



BAMPR-XAWR



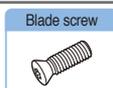
| Designation | Application | Stock | Application range | |
|-------------|----------------|-------|-------------------|-----------------|
| | | DP200 | Finish machining | Rough machining |
| BAMPR-XAF | Facing | ● | △ | ○ |
| BAMPR-XAW | Wiper (Flat) | ● | ○ | x |
| BAMPR-XAWR | Wiper (Radius) | ● | ○ | x |

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

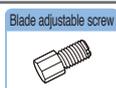
Available arbors

| Designation | NC Arbors |
|--------------------|----------------------------|
| APD(M)080R/L-PB□□Z | BT□□-FMA25.4(FMC27)-□□ |
| APD(M)100R/L-PB□□Z | BT□□-FMA31.75(FMC32)-□□ |
| APD(M)125R/L-PB□□Z | BT□□-FMA38.1(FMB40)-□□ |
| APD(M)160R/L-PB□□Z | BT□□-FMA50.8(FMB/FMC40)-□□ |

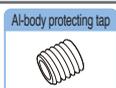
Parts



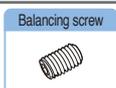
ETKA0620



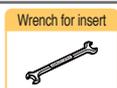
AZ0514-SPN6



UZD1010



KHE0610



SPN-6



TW25-100

APD(M)-PB

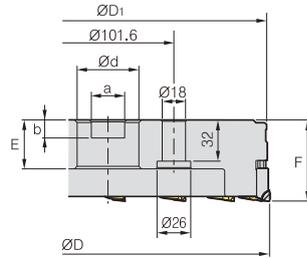
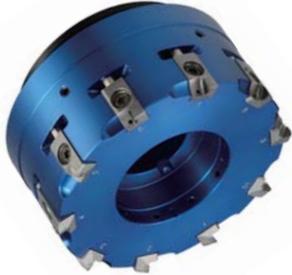


Fig. 3

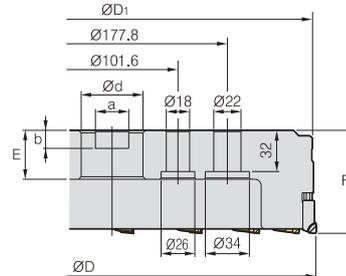


Fig. 4

(mm)

| Designation | | | Max | ØD | ØD1 | Ød | a | b | E | F | ap | | Fig. |
|-------------|--------------|----|-----|-----|-----|------------|------------|----|----|----|----|------|------|
| APD(M)-PB | 200R/L-PB12Z | 12 | 26 | 200 | 197 | 47.625(60) | 25.4(25.7) | 14 | 40 | 63 | 5 | 4.0 | 3 |
| | 250R/L-PB16Z | 16 | 32 | 250 | 247 | 47.625(60) | 25.4(25.7) | 14 | 40 | 63 | 5 | 6.5 | 3 |
| | 315R/L-PB18Z | 18 | 42 | 315 | 312 | 47.625(60) | 25.4(25.7) | 14 | 40 | 63 | 5 | 11.3 | 4 |

• () Metric size

Available PCD blades

BAMPR-XAF



BAMPR-XAW



BAMPR-XAWR



| Designation | Application | Stock | Application range | |
|-------------|----------------|-------|-------------------|-----------------|
| | | DP200 | Finish machining | Rough machining |
| BAMPR-XAF | Facing | ● | △ | ○ |
| BAMPR-XAW | Wiper (Flat) | ● | ○ | x |
| BAMPR-XAWR | Wiper (Radius) | ● | ○ | x |

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

Available arbors

| Designation | NC Arbors |
|--------------------|--------------------------|
| APD(M)200R/L-PB□□Z | BT□□-FMA47.625(FMB60)-□□ |
| APD(M)250R/L-PB□□Z | |
| APD(M)315R/L-PB□□Z | |

Parts

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



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