

MULTIDRILL **MDA** Series

Venturing into new regions of aluminum alloy drilling!



Covers a wide application range from high-precision to high-efficiency drilling

New DLC Coat **AURORA Coat X** *New*

Internal Coolant Supply Type ϕ 1.0 to ϕ 12.0mm

ϕ 1.0 to ϕ 3.0mm 3D 5D 10D 15D 20D

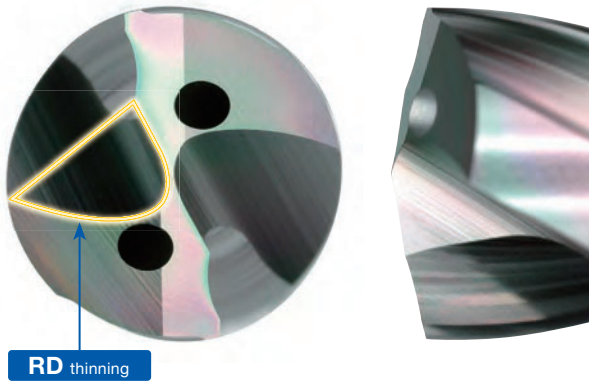
ϕ 3.1 to ϕ 12.0mm 3D 5D 10D



Realising high-precision/high-efficiency drilling!

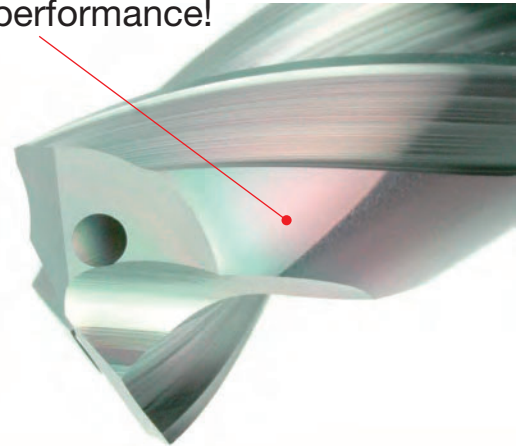
RD Thinning

Outstanding centring with special web thinning effect!



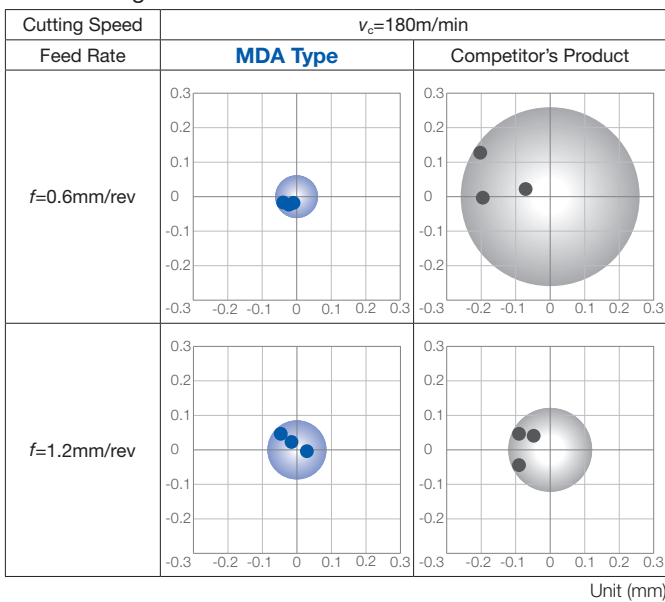
Wide Double Margin ^{*Diameter: 3.1mm up}

Hole precision is improved with wide double margin providing excellent guide performance!



■ Hole Position Accuracy

Direct drilling

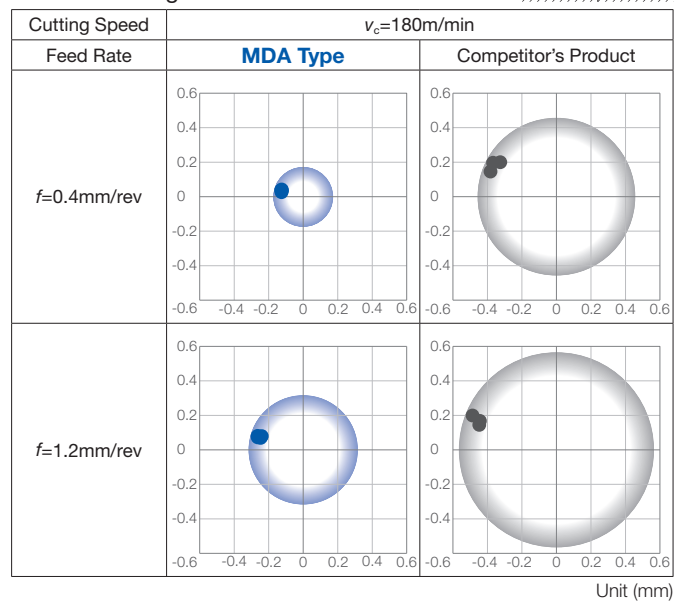
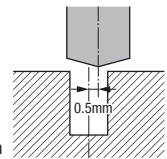


Work Material: ADC12 Tool: MDA0600S06H05 ($\phi 6\text{mm} \times 5\text{D}$) Wet

Hole position stable even under high-efficiency conditions

Pre-cast drilling

Pre-cast hole deviation: 0.5mm



Work Material: ADC12 Tool: MDA0600S06H05 ($\phi 6\text{mm} \times 5\text{D}$) Wet

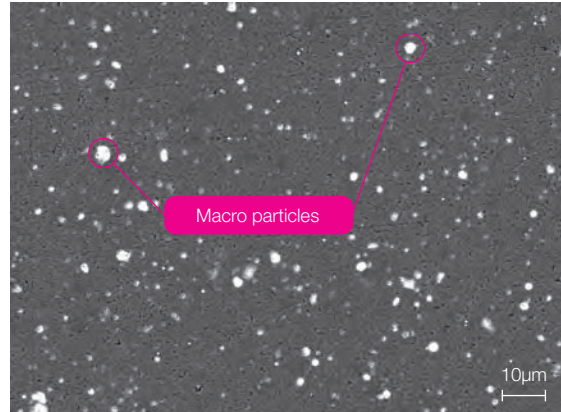
Significantly reduces the effects of pre-cast hole misalignment

AURORA Coat X DLC Coat

● Coating Surface Properties (SEM image)



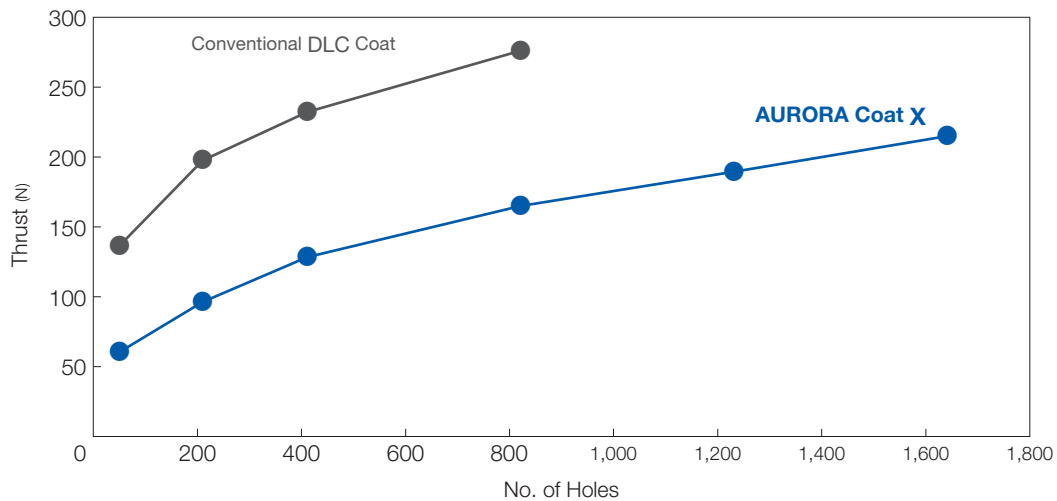
AURORA Coat X



Conventional DLC Coat

New technology significantly improves smoothness

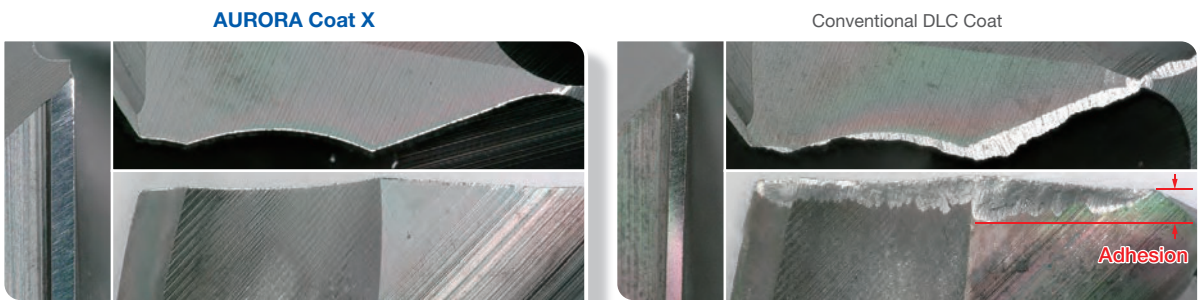
● Cutting Force



Work Material: ADC12 Machine: Vertical Machining Centre BT30
Tool: MDA0600S06H05 (ø6mm × 5D)
Cutting Conditions: $v_c = 180\text{m/min}$ $f = 0.2\text{mm/rev}$ Internal Coolant Supply (Water-soluble)

Improved coating surface smoothness keeps resistance low at the initial stage, then transits to a gradual rise in resistance for a longer tool life

● Adhesion Resistance



Work Material: ADC12 Machine: Vertical Machining Centre BT30
Tool: MDA0600S06H05 (ø6mm × 5D)
Cutting Conditions: $v_c = 180\text{m/min}$ $f = 0.2\text{mm/rev}$ Internal Coolant Supply (Water-soluble)

Excellent smoothness significantly reduces adhesion

■ Recommended Cutting Conditions (L/D = 3D, 5D)

Work Material	Aluminum alloy casting/Aluminum alloy die cast material ADC, AC		Duralumin-based aluminum alloy Al-Zn-Mg type (7075)		Wrought aluminum alloy Al-Mg type (5052)	
	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)
up to ø2.00	50 - 120	0.05 - 0.40	40 - 90	0.05 - 0.20	50 - 120	0.04 - 0.08
up to ø3.00	60 - 150	0.10 - 0.60	50 - 100	0.10 - 0.30	60 - 150	0.04 - 0.08
up to ø4.00	60 - 150	0.15 - 0.80	50 - 120	0.15 - 0.40	60 - 150	0.05 - 0.12
up to ø6.00	80 - 200	0.20 - 1.20	80 - 180	0.20 - 0.60	80 - 200	0.08 - 0.18
up to ø8.00	100 - 200	0.20 - 1.20	80 - 180	0.20 - 0.80	100 - 200	0.10 - 0.20
up to ø10.00	100 - 200	0.20 - 1.20	100 - 180	0.20 - 0.80	100 - 200	0.10 - 0.25
up to ø12.00	120 - 250	0.20 - 1.20	120 - 200	0.20 - 0.80	120 - 250	0.10 - 0.30

- The recommended cutting conditions above are for cases where a water-soluble coolant is used.
- Use with internal coolant supply.
- Recommended coolant supply pressure of 2.0MPa or higher for ø3 or below, and 1.5MPa or higher for over ø3.
- Keep the drill runout at 0.02mm or lower.
- If abnormalities such as noise or vibration occur, change the cutting conditions accordingly.
- When drilling with pre-cast holes, we recommend the lower-limit end of the recommended conditions.

■ Recommended Cutting Conditions (L/D = 10D or longer)

Work Material	Aluminum alloy casting/Aluminum alloy die cast material ADC, AC		Duralumin-based aluminum alloy Al-Zn-Mg type (7075)		Wrought aluminum alloy Al-Mg type (5052)	
	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)
up to ø2.00	50 - 100	0.05 - 0.20	40 - 60	0.05 - 0.15	50 - 100	0.04 - 0.08
up to ø3.00	60 - 120	0.10 - 0.30	50 - 80	0.10 - 0.20	60 - 120	0.04 - 0.08
up to ø4.00	60 - 120	0.15 - 0.40	50 - 100	0.10 - 0.25	60 - 120	0.04 - 0.10
up to ø6.00	80 - 150	0.20 - 0.60	60 - 120	0.15 - 0.30	80 - 150	0.06 - 0.12
up to ø8.00	80 - 180	0.20 - 0.60	80 - 150	0.20 - 0.40	80 - 180	0.08 - 0.15
up to ø10.00	100 - 180	0.20 - 0.60	100 - 150	0.20 - 0.40	100 - 180	0.10 - 0.20
up to ø12.00	120 - 200	0.20 - 0.60	120 - 180	0.20 - 0.40	120 - 200	0.10 - 0.25

- The recommended cutting conditions above are for cases where a water-soluble coolant is used.
- Use with internal coolant supply.
- Recommended coolant supply pressure of 2.0MPa or higher for ø3 or below, and 1.5MPa or higher for over ø3.
- Keep the drill runout at 0.02mm or lower.
- If abnormalities such as noise or vibration occur, change the cutting conditions accordingly.
- For drilling with pre-cast holes, drills of 10D (or longer) are not recommended.
- Drilling holes 10D or longer may lead to abnormalities; drill a guide hole (hole depth 1D to 2D) in advance.
- A 3D (5D) drill can be used for guide hole drilling. (For guide hole drilling, use conditions lower than the "Recommended feed for 10D or longer")

Sumitomo Electric Cutting Tools Official Apps for iOS/Android



Cutting calculation App

SumiTool Calculator



Grade & chipbreaker comparison App

SumiTool Converter



< SAFETY NOTES >



- Very hot or lengthy chips may be discharged while the machine is in operation. Therefore, machine guards, safety goggles or other protective covers must be used. Fire safety precautions must also be considered.

- Please handle with care as this product has sharp edges.
- Improper cutting conditions or mis-handling of the tool may result in breakages or projectiles. Therefore, please use the tool within its recommended conditions.

- When using non-water soluble cutting oil, precautions against fire must be taken and please ensure that a fire extinguisher is placed near the machine.

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