



Ultra-Mill®

Designed, Manufactured, & Serviced in the USA



COMPLETE METALWORKING SOLUTIONS
(800) 991-4225 www.ahbinc.com
ISO Certified customerservice@ahbinc.com

Cutter Bodies & Diamond Tipped Cartridges

HERITAGE CUTTER®



Benefits of the Decatur Diamond Ultra-Mill®

- Original patented design made very popular due to ease of set-up and industry leading flatness and finish
- Adjustable height can be set to less than .005mm total TIR
- Large pocket for ease of chip evacuation
- Ability to run as roughing mill or implement wipers at intervals to achieve close tolerance finish & flatness results
- Symmetrical cutter body allows you to use as a RH or LH mill with only a change of cartridges
- Geometry in the cartridge, instead of design, allows it to apply the best solution to your process and needs with variable radial & axial rake
- Comes standard in multiple ranges from 50mm–250mm metric, 2.0”–14.0” imperial diameter sizes, or custom to your specific needs
- Ideal for milling Aluminum, Cast Iron, MMC, Copper Alloys, Plastics, & Composites
- Available for PCD & PcBN Applications
- Capable to run with flood coolant, thru spindle coolant, or dry as needed

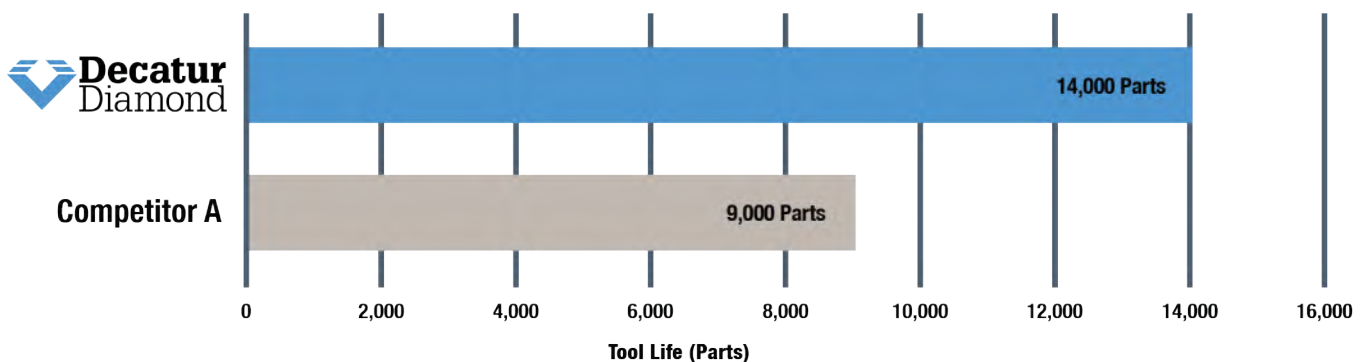


Case Study

3.0” Face Mill with Steel Body, 10 Station, PCD Tipped Adjustable Cartridge, .080mm/tooth feed
Material 365 — T6 Cast Aluminum Face Milling Test — Cylinder Head Deck Face Cubing Application

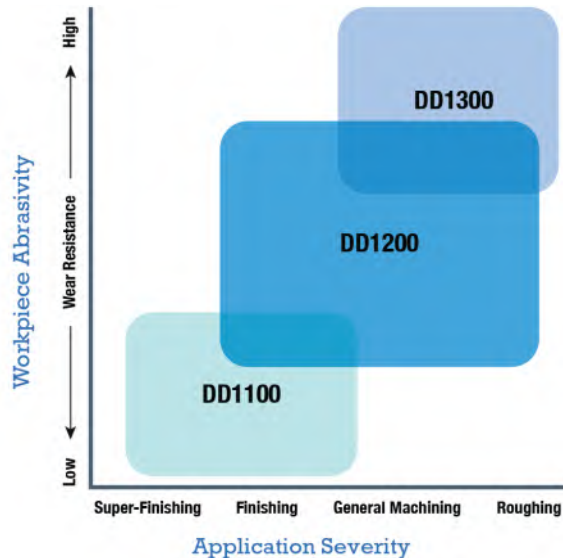
| PCD Grade | Tool Life (Parts) | Failure | RPM | Cutting Speed | Feed Rate | Depth of Cut |
|--------------|-------------------|-------------|-------|---------------|-------------|---------------------------|
| Competitor A | 9,000 | Flatness | 11642 | 2250 m/min | 9314 mm/min | 2 passes, total up to 5mm |
| DD1200 | 14,000 | Worn/Finish | 11642 | 2250 m/min | 9314 mm/min | 1 pass, up to 5mm |

*Both tools run wet with flood & thru coolant



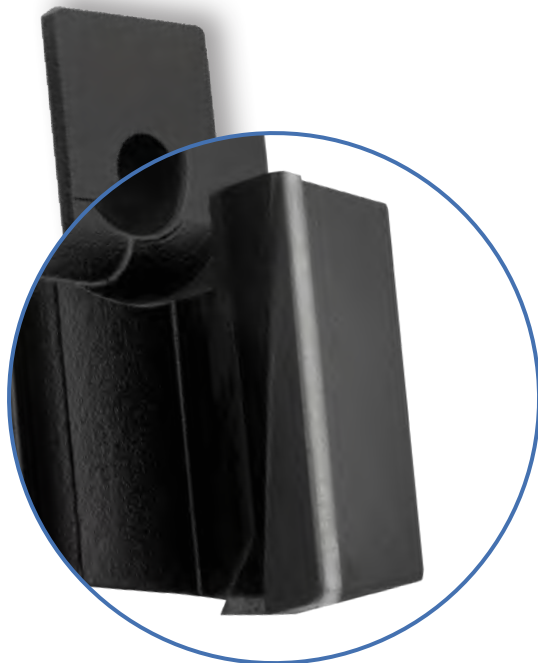
The Decatur Diamond Ultra-Mill® was tested to reduce cycle time. Results eliminated one machining pass at same cutting conditions, while increasing tool life by 55.5%.

The standard grade PCD for the Ultra-Mill® is the DD1200 grade. The chart below shows how optional PCD grades can be applied.



| Grades | Applications | Features |
|---------------|---|---|
| DD1100 | <ul style="list-style-type: none"> • AISi Alloys <9%/ Wrought Al Alloys • Plastics, Graphite, Composites • Fine Finishing | <ul style="list-style-type: none"> • Ideal for light cuts & finishing • High edge strength & superior wear resistance • High speed machining of non-ferrous metals & brass |
| DD1200 | <ul style="list-style-type: none"> • AISi Alloys 9–12% • Compacted Graphite Iron (CGI), Bi Metal Cuts • Austempered Ductile Iron (ADI) | <ul style="list-style-type: none"> • Ideal for wide range of materials & applications • Multi-purpose grade • Good balance of wear & edge strength |
| DD1300 | <ul style="list-style-type: none"> • AISi Alloys >12% • MMC (Green Carbide)/ CFRP/GFRP • Some Ferrous Applications | <ul style="list-style-type: none"> • Handles extreme thermal instability • Heavy Depth of Cut, Heavy Interruptions • Works well in difficult materials |

- Grades for all applications
- Increase productivity
- Lower output costs per unit



Cartridge Options:

- RH or LH cartridge options
- Multiple wiper or radius combinations
- Multiple positive & negative axial rake options
- Multiple positive & negative radial rake options
- Available in PCD & PcBN tips

Contact us for help with your cartridges:
salesddi@heritagecutter.com
 888.547.4156



Ultra-Mill®

Speeds & Feeds Recommendations

Material Cutting Condition Recommendations (Metric)

| Material Machined | | Operation | SFM (m/min) | Feed Rate (mm/rev) | Ap (mm) |
|-------------------------|--|------------------------------|----------------|-----------------------|----------|
| Aluminum Alloy | 4–8% Si | Rough/Interruptions | 1000–4000 | 0.1–0.4 | 0.1–4.0 |
| | | Finishing/Light/Continuous | 2000–5000 | 0.1–0.3 | 0.1–0.5 |
| | 9–12% Si | Rough/Vary DOC/Interruptions | 700–2000 | 0.1–0.4 | 0.1–4.0 |
| | | Finishing/Light/Continuous | 1000–3000 | 0.1–0.3 | 0.1–0.5 |
| | >12% Si | Rough/Vary DOC/Interruptions | 300–1000 | 0.1–0.4 | 0.1–4.0 |
| | | Finishing/Light/Continuous | 500–1500 | 0.1–0.3 | 0.1–0.5 |
| Cast Iron | CGI/NCI | Rough/Vary DOC/Interruptions | 50–300 | 0.2–0.5 | 0.5–3.0 |
| | | Finishing/Light/Continuous | 50–400 | 0.1–0.3 | <0.5 |
| MMC | 20% SiC/Al | General Milling | 300–700 | 0.1–0.4 | 0.2–1.5 |
| Copper Alloys | Copper, Zinc, Brass | General Milling | 400–1300 | 0.03–0.3 | 0.05–2.0 |
| Plastics/ Composites | Carbon/Graphite Fiberglass/Plastics | General Milling | 300–2500 | 0.05–0.3 | 0.1–3.0 |
| | | General Milling | 200–1000 | 0.05–0.5 | 0.1–3.0 |

Material Cutting Condition Recommendations (Imperial)

| Material Machined | | Operation | SFM (feet/min) | Feed Rate (inch/rev) | Ap (inch) |
|-------------------------|--|------------------------------|-------------------|-------------------------|-------------|
| Aluminum Alloy | 4–8% Si | Rough/Interruptions | 3300–13000 | 0.004–0.016 | 0.004–0.150 |
| | | Finishing/Light/Continuous | 6500–16500 | 0.004–0.012 | 0.004–0.020 |
| | 9–12% Si | Rough/Vary DOC/Interruptions | 2300–6500 | 0.004–0.016 | 0.004–0.150 |
| | | Finishing/Light/Continuous | 3300–10000 | 0.004–0.012 | 0.004–0.020 |
| | >12% Si | Rough/Vary DOC/Interruptions | 1000–3300 | 0.004–0.016 | 0.004–0.150 |
| | | Finishing/Light/Continuous | 1600–4900 | 0.004–0.012 | 0.004–0.020 |
| Cast Iron | CGI/NCI | Rough/Vary DOC/Interruptions | 150–1000 | 0.008–0.020 | 0.020–0.120 |
| | | Finishing/Light/Continuous | 150–1300 | 0.004–0.012 | <0.020 |
| MMC | 20% SiC/Al | General Milling | 1000–2300 | 0.004–0.016 | 0.008–0.060 |
| Copper Alloys | Copper, Zinc, Brass | General Milling | 1300–4300 | 0.001–0.012 | 0.002–0.080 |
| Plastics/ Composites | Carbon/Graphite Fiberglass/Plastics | General Milling | 1000–8200 | 0.002–0.012 | 0.004–0.120 |
| | | General Milling | 650–3300 | 0.002–0.020 | 0.004–0.120 |

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