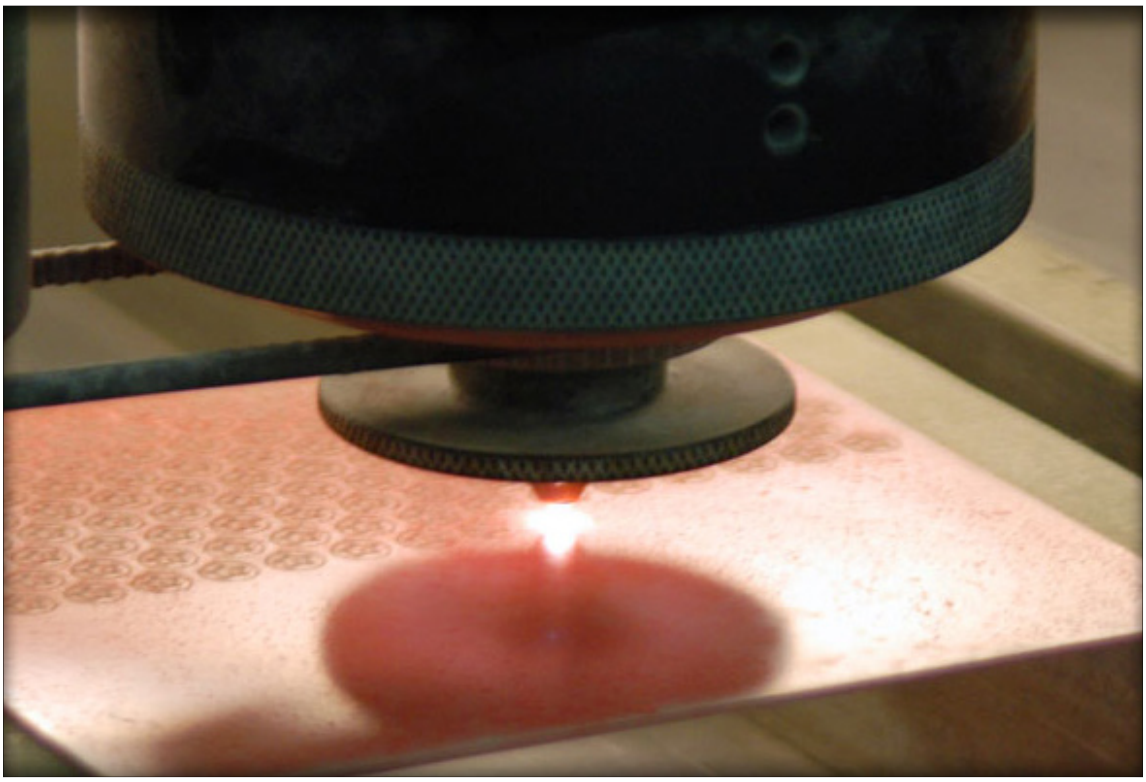
ACCUMET

DESIGN GUIDELINE

TOLERANCES FOR LASER CUTTING & DRILLING METALS

How to Properly Specify Shapes and Tolerances in CAD for Laser Cutting and Drilling Metal



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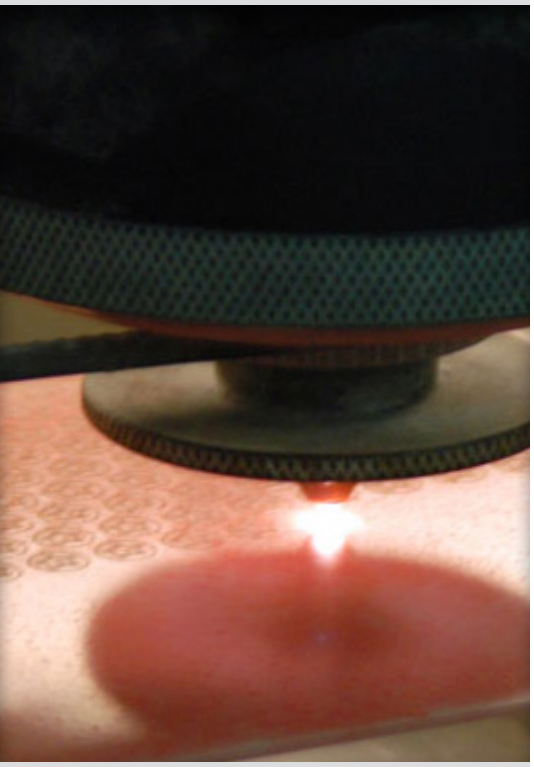


Maintain tolerances to ensure proper performance and avoid rework.

Accumet is able to process a vast array of different materials including both ferrous and non-ferrous metals. This is because of the various laser systems housed within Accumet's two production facilities. Accumet uses state of the art equipment including CO2, Yag, and Fiber lasers during the metal fabrication process. Because Accumet has the ability to laser process such a wide variety of materials, this guideline should be considered as such—merely a general guideline to be used as a reference during the design process. This guideline is specifically written for laser machining metals ranging in thickness from .005" to .250".

Please contact our sales department with any questions or to discuss your particular processing specifications. Accumet's engineering team is constantly pushing the boundaries and expanding our capabilities.

Hole taper tolerance: 10% of material thickness

Internal machined feature to internal feature tolerance: ± 0.003", non-cumulative

Hole diameter: ±0.003" measured on exit side

As supplied edge to internal feature, mechanically aligned tolerance: ±0.020"

As supplied edge to internal feature, optically aligned tolerance: ±0.010"

Overall length and width tolerance from machined edge to machined edge: ± 0.003"

Maximum sheet size our laser tables can accommodate: 60" x 120" up to .250" thk.

Smallest feature: 0.002"

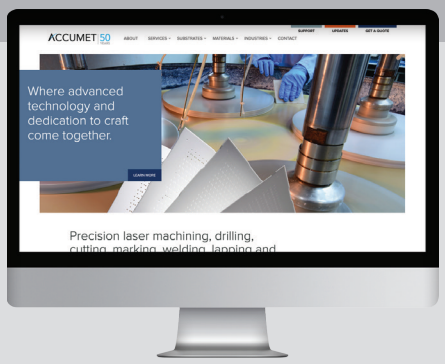
Minimum radius: 0.002"

Rotary Cutting tolerance: ± 1 degree

Maximum tube length our laser can accommodate: 120"

Please note: tolerances shown above are typically best case. However, tolerances are material dependent, as different types of metals react differently to the laser. Please consult with our sales department with any questions or with specific design concerns.

NEXT STEPS



Review our library of Tech Briefs for additional laser processing insights

Ask us a design/engineering support question

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Additional metals processing capabilities:

Deburring

Anodizing

Specific Coatings

Specific Finishes:
#2B mil finish
#4 finish (single or double-sided)
#8 finish (single or double-sided)

Laser Marking: Please refer to our design guideline for further information.

Laser Welding: Please refer to our design guideline for further information.

We have the equipment and materials to be your trusted resource.

Metal fabrication is more than meets the eye. There are many factors to consider. One key consideration is which laser system will best cut a specific metal. Is it ferrous or non-ferrous? How thick is it? How large is it? Will it need to be polished, lapped, deburred, anodized, or otherwise treated? Accumet owns and operates over 25 laser systems including CO2, Yag and Fiber lasers. We have micro-positioning tables, multiple beam systems, and statistical process controls to get your parts done perfectly. And with up to 2200 watts of CO2 energy, 2000 watts of fiber energy and 400 watts of Yag energy, you can rest assured we have the power and adaptability to get the job done right.

Inventory:
Accumet offers the service of procuring and maintaining inventory on a wide variety of materials. We are also happy to receive, store and machine customer-supplied materials for individual or blanket orders.

Let's get started.

Please submit all requests for quotation to sales@accumet.com. Please include DXF (preferred file format) or pdf, tolerances, include the type of material, whether or not you will be supplying material or if you would like Accumet to supply it (and therefore include material in pricing), quantities and any specific finishes.