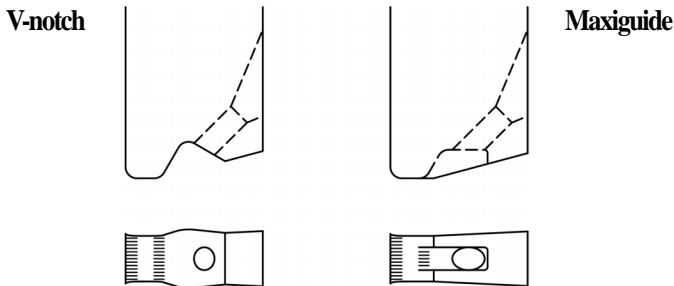


## Gaiser obtains *Patent Pending* Status for New Wedge Design *The MaxiBond*

Gaiser Tool Company has recently obtained patent pending status for a new, next-generation small wire wedge design for gold and aluminum wire. This new design should replace the venerable maxiguide in many applications.

To understand the features and benefits of the new maxibond design, it is necessary to understand the two types of small wire wedge designs currently available.

The first and earliest design, the V-Notch, was introduced sometime in the early 1960's. The V-notch design incorporates the front radius (FR), bond length (BL), and back radius (BR) features we are accustomed to today, with an open notch design through which the wire must travel after it exits the wire feed hole.



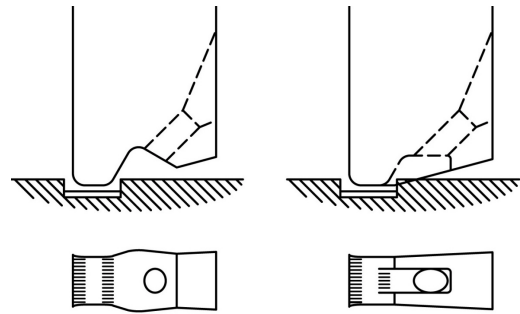
The second design, and current standard-bearer in wedge performance, is the maxiguide. This circa 1979 design was a Gaiser Tool Co. innovation, invented by Dennis Gaiser. The maxiguide, also called pocket-type, features a pocket with side-walls that contains and guides the wire after the feed hole, and centers the wire under the bond foot geometry (the FR, BL, & BR).

The maxiguide has proven to provide the best wire centering under the bond foot and placement accuracy on the bonding pad of any small wedge design.

Given the preceding, oddly, Gaiser and several wire bonder equipment OEM's noticed a number of customers requesting and returning to the V-Notch design recently. In looking into why, we uncovered several unarticulated needs recently developed in the small wire wedge bonding arenas.

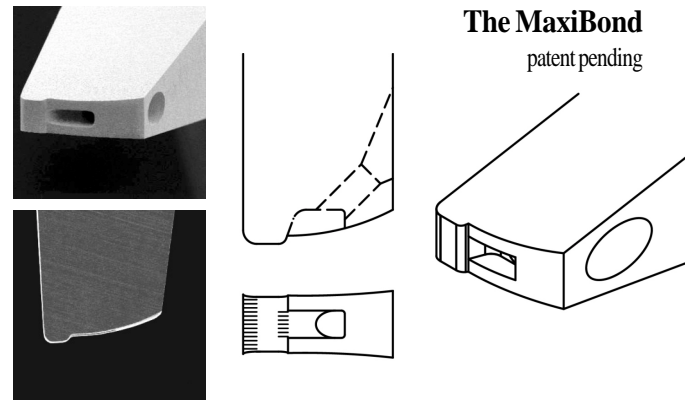
Many new smaller and shrinking bond pad sizes and pitches are requiring smaller wedge tool widths (the "W" dimension). If the (W) is decreased much below 0.003/75µm, the maxiguide walls become razor thin, fragile, and increasingly un-manufacturable.

Additionally, many of these shrinking bond pads can be recessed, surrounded by passivation or protective overcoat, and vulnerable to interference with and cracking by the maxiguide walls.



In changing back to the v-notch design to address the smaller (W) and recessed pad demands, a forgotten benefit of the v-notch vs. the maxiguide has been uncovered: the v-notch design inherently has a "complete" back radius (BR), uncompromised by the blending into the maxiguide walls. This complete (BR) geometry provides excellent first bond heel strength and second bond termination and consistent tailing. But wire centering is ultimately compromised in v-notch vs. the maxiguide.

In assessing this industry trend and the reasons returning to v-notch designs, Gaiser designed the maxibond wedge with a raised pocket, dropped foot architecture. This new geometry provides the wire guiding and centering of a maxiguide with the small (W), fine pitch and recessed pad access of the v-notch.



- Complete back radius for best 1<sup>st</sup> bond heel and 2<sup>nd</sup> bond tailing.
- Access into recessed pads without damage to surrounding passivation.
- Allows minimum "W" dimension and 45 degree side chamfers.
- Small pad and close proximity bonding with enhanced wire centering vs. v-notch.