



The Project:

Micro-pitch high density connector

Debug of a single cavity 1.27mm (.50") pitch tool to produce a product to meet the customer's specifications.

The Overview:

Our customer was experiencing tin-lead solder ball wicking/flashing into the circuits after contact insertion during the final assembly phase. We were assigned to diagnose the root cause and provide an action plan to eliminate the 'solder wicking' in order to produce a working assembly.

The Challenge:

The main challenge of this project was altering existing tooling given each core pin measured $.0146" \pm .0001"$ x $.0050" \pm .0001"$ (a single sheet of paper measures approximately $.004"$ over a 50 position by 10 row product configuration (500x individual core pins). Given the tool was designed and built outside of our facility and transferred in to complete the debug phase, re-tooling was not a viable option given the associated costs to do so. As a result, we needed to get creative to determine a way to alter the existing tooling.

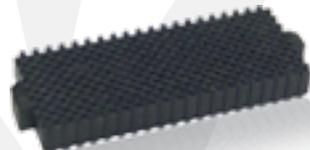


Fig 1: Electrical Connector

The Solution:

In conjunction with the customer's engineering group, a team of Matrix Tool's plastic and design engineers were assembled to assess the overall project. It was determined that the existing coring would need to be altered by:

- Adding a $.0020"$ by 45° chamfer on two of the four corners
- The $.0050"$ dimension would need to be altered to $.0047"$



Fig 2: Various Positions

These changes would essentially add plastic and 'tighten the fit' of the contacts to eliminate the solder wicking. Our grinder specialists were able to successfully alter the existing coring (10 towers per laminate) by first performing a full inspection of all core pins to determine true size and location. We then removed the correct amount of steel from each core pin using the previously gathered inspection data. The most difficult area of this alteration was keeping each core pin central, meaning $.00015"$ would need to be removed from each side of each of the 10 towers per core pin. After a qualifying sample, the product was shipped to our customer and successful assemblies were produced.

The Benefits:

Matrix Tool was able to successfully debug our customer's product to meet their specifications. By altering existing steel, we were able to help correct the solder ball wicking issue on our customer's end to produce a fully functioning working assembly.

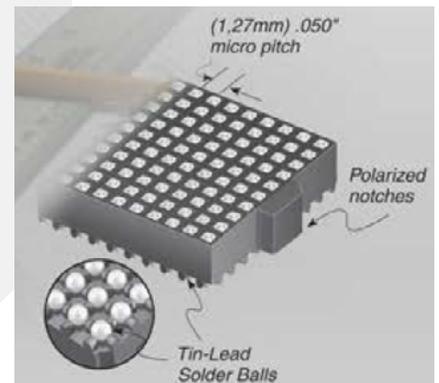


Fig 3: Assembled Electrical Connector

Whether your component is large or extremely intricate, Matrix Tool is ready and awaiting the challenge!

For a quotation or additional information, contact Matrix Tool Inc: