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# NASA TECH BRIEF

## Goddard Space Flight Center



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### A Simple, Efficient Resistance Soldering Apparatus

#### The problem:

A wide variety of apparatus is available for soldering electric leads to multiple terminal connectors. Most of these are complex, bulky, and difficult to handle in soldering connectors with densely packed pins. Even a very common model which uses a pair of probe tips that conduct current to heat a junction of a lead and terminal solder cup has two inadequacies. First, it requires that both probe tips be in firm electrical contact with the solder cup, which is time consuming and inefficient. Second, the current flows perpendicular to the solder cup axis, causing uneven heat distribution along its length and hence a possibly poor solder connection containing voids, uneven solder flow, etc.

#### The solution:

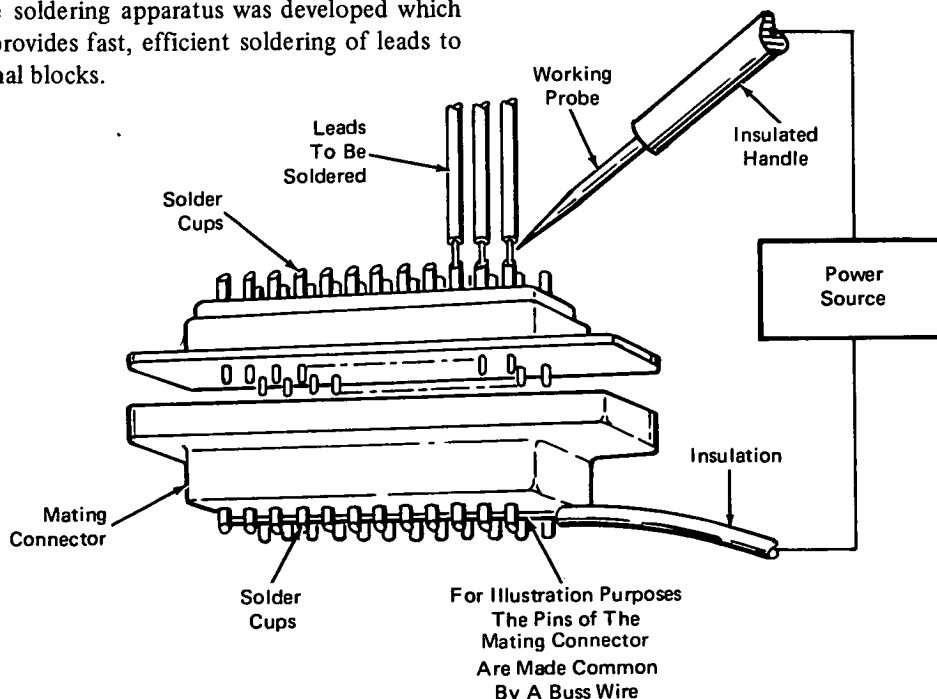
A resistance soldering apparatus was developed which is simple and provides fast, efficient soldering of leads to multiple terminal blocks.

#### How it's done:

The apparatus (shown in the figure) uses a power source with one polarity connected to the working probe. The other polarity is attached to a connector that has all pins common, by using a shorting bus. This common connector completes the circuit to each connection that is to be soldered.

Each individual lead to be soldered is inserted into its own solder cup, on the back of the multiple terminal connector. Male and female connectors are mated. Each lead is then soldered to its cup connector by applying the working probe to that lead and cup.

With this technique, soldering is fast and efficient. Heating is uniform along the axes of the solder cups, so that joints are better and more reliable than those produced by other methods.



(continued overleaf)

This technique provides fast and efficient soldering. Uniform heating along the axes of the solder cups results in better, more reliable solder joints than those produced by other methods.

**Notes:**

Request for further information may be directed to:  
Technology Utilization Officer  
Goddard Space Flight Center  
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Greenbelt, Maryland 20771  
Reference: TSP72-10649

**Patent status:**

This invention has been patented by NASA (U.S. Patent No. 3,621,194). Inquiries concerning non-exclusive or exclusive license for its commercial development should be addressed to:

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