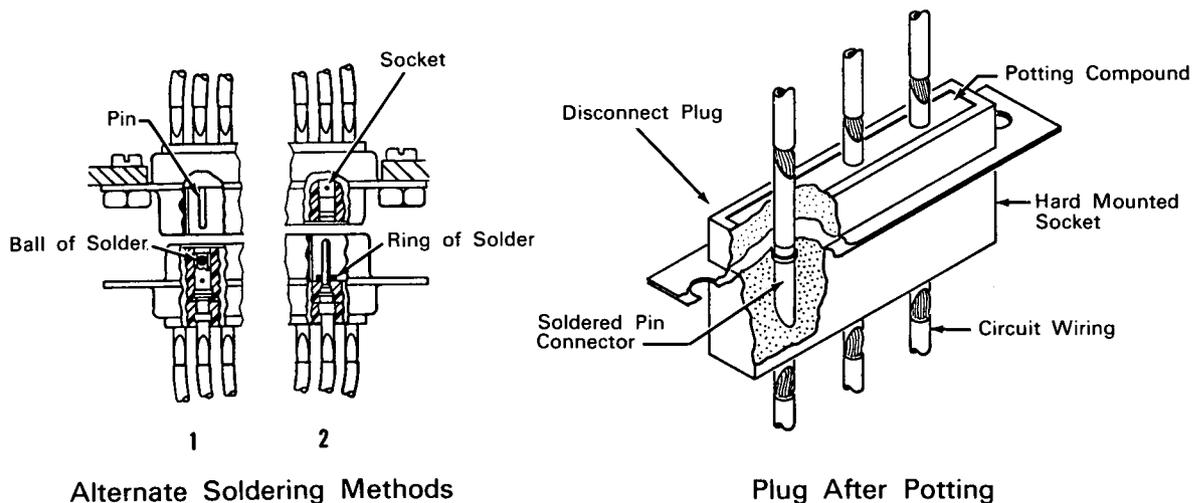


NASA TECH BRIEF



This NASA Tech Brief is issued by the Technology Utilization Division to acquaint industry with the technical content of an innovation derived from the NASA space program.

Circuit Reliability Boosted by Soldering Pins of Disconnect Plugs to Sockets



Alternate Soldering Methods

Plug After Potting

The problem: Increasing the reliability of electrical wiring systems where disconnect plugs must be utilized for wiring and testing a circuit. Failures associated with disconnect plugs have occurred after their earlier satisfactory use in ground or flight tests.

The solution: Making a permanent joint between pins and sockets of disconnect plugs once the circuit or module has been tested and found to perform satisfactorily. Contact points may be fused through soldering, brazing, or welding.

How it's done: Soldering or other fusing techniques may vary with the design of the plug. For instance, if the pin connector is rigidly mounted, a ball of solder is put into each socket terminal. On the other hand, if the socket connector is rigidly mounted a ring of solder is put around each individual pin. Each pin/socket pair is then soldered, one at a time. Care must be taken not to disturb previously-soldered con-

nections.

An additional step can be taken to add reliability. After all of the terminals are permanently joined, a potting cup may be mounted around the terminals on that side of the plug which is not rigidly mounted. This step can be changed to suit the design of the disconnect plug. When the cup is filled with a potting compound a permanent and reliable joint is assured.

Notes:

1. Electrical modules or circuits in equipment for the transportation industry, where quick-disconnect plugs are incorporated but not disconnected during operation, would have improved reliability by using this innovation. This would be particularly true for trucks and aircraft that are subject to shock and vibration.
2. One application reported is in the electronic

(continued overleaf)

circuitry of the radar employed to warn aircraft of storms.

3. In isolated or unmanned equipment, this method will reduce or discourage tampering.

Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated.

Source: W. B. Pierce
Jet Propulsion Laboratory (JPL-447)