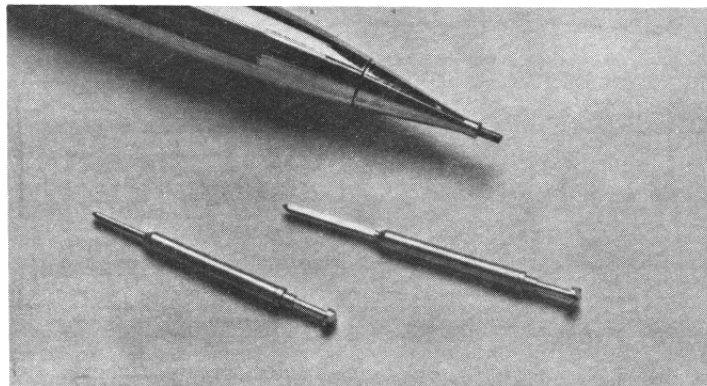


Application Report

BRUSHWELLMAN
ENGINEERED MATERIALS

AR 36-11-17

Industry: Automatic Electronic Test Equipment
Product: Beryllium Copper Rod And Wire



Spring loaded contact probes for high speed automatic testing of printed circuit boards take advantage of two characteristics of beryllium copper alloys: wear resistance and high conductivity. Good metal-to-metal contact is needed between the printed circuit board and the contact point on the plunger, something the hardness of beryllium copper repeatedly provides. The contact must also have good electrical conductivity to ensure it remains a passive part of the circuit.

These units come in a number of different sizes, shapes, and material configurations. On some models, beryllium copper wire is also used for the spring element. In other designs, drawn beryllium copper tubing is used for the barrel.

Material Requirements

- High Strength
- Good Conductivity
- Wear Resistance
- Ability to be Plated
- Age Hardenable

The plunger is made of beryllium copper rod which is machined, heat treated, and then plated with gold or rhodium.

Whether the head is a point, a grid, a pyramid, or some other design, the plunger tip must have sufficient hardness to penetrate oxides, flux, and other contaminants on bare printed circuit boards.

In the unit illustrated, the beryllium copper plunger has a pyramid tip designed for maximum penetration. It exerts an initial 1½ ounce force and 3½ ounce final contact force, with a 0.125" stroke. It can handle current up to 2 amperes.

The plunger bodies are designed to be plugged into mating sockets on test boards where multiple connections must be made. They are used for testing printed circuit boards and planar multi-circuit devices, punched card and tape readers, and slip ring pick off brushes where dense packing is essential. The units are both reliable and easy to replace.

For additional information, contact:

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