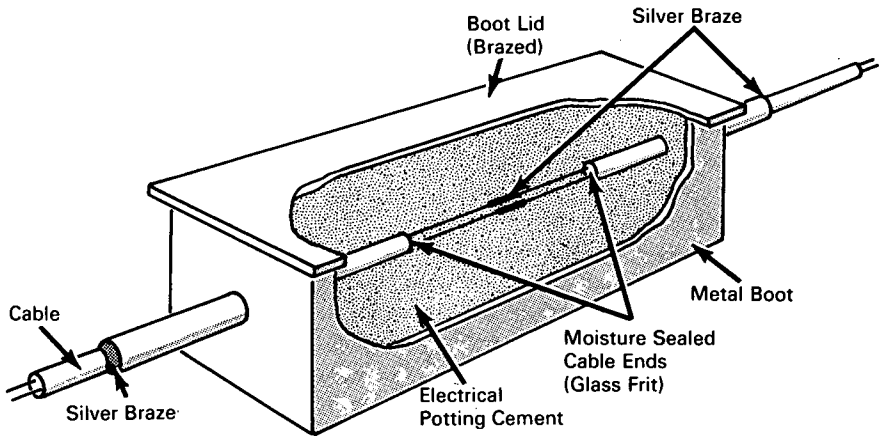
AEC-NASA TECH BRIEF

Metal Boot Permits Fabrication of Hermetically Sealed Splices in Metal Sheathed Instrumentation Cables



The problem:

To devise a technique for the splicing of hard sheathed instrumentation cables used with high temperature strain gages and thermocouples. The splice must be hermetically sealed and must not change the electrical characteristics of the cable or the sensor to which it is attached.

The solution:

A small metal boot to confine the spliced conductors and ceramic insulation. The conductors are joined by silver brazing.

How it's done:

The boot is fabricated of stainless steel type 304. A commercially available electrical cement is used to insulate the conductors after they are brazed with a silver braze alloy. Where the instrumentation cables utilize magnesium oxide insulation, the cable ends must be moisture sealed prior to potting with the cement. The seal is required to prevent contamination of the MgO insulation by moisture evolved from the cement as it cures.

Notes:

1. The metal boot may be fabricated in different sizes to accommodate the various sized cables.
2. This boot has proved to be a highly reliable sealed splice which is equally effective at cryogenic temperatures, high temperatures, nuclear environments, and combinations thereof.
3. Use of this technique was dependent upon the development of a special glass frit for the moisture sealing of the cable ends. This frit is described in Tech Brief B66-10705, "Glass Formulation Has High Coefficient of Thermal Expansion."
4. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   AEC-NASA Space Nuclear Propulsion Office
   U.S. Atomic Energy Commission
   Washington, D.C. 20545
   Reference: B66-10704

(continued overleaf)

Patent status:

No patent action is contemplated by AEC or NASA

Source: G. Chambers
of Westinghouse Astronuclear Laboratory
under contract to
AEC-NASA Space Nuclear Propulsion Office
(NU-0083)