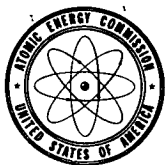


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Brief 68-10318

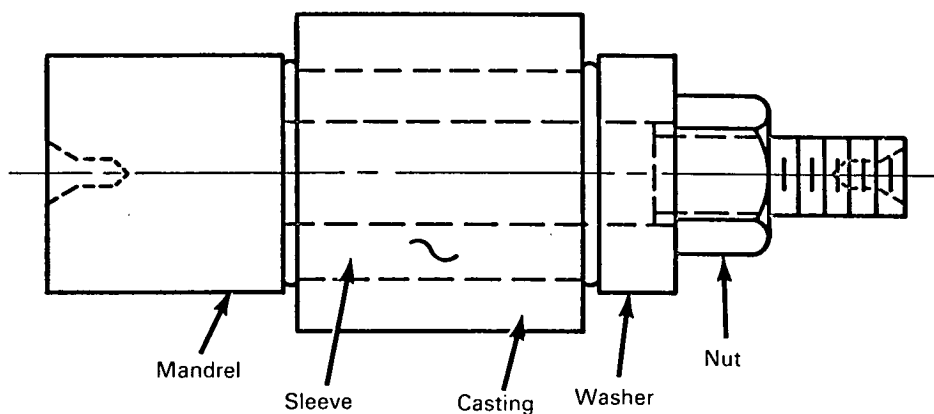


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Compressible Sleeve Provides Automatic Centering for Grinding or Turning of Cylinders



The problem:

To support a rough, hollow, cylindrical casting so that the outside diameter can be ground or turned parallel to the theoretical center line.

The solution:

An elastomeric sleeve, supported on a threaded mandrel, is slipped into the cast center hole of the part. By expanding the diameter of the sleeve with pressure against the ends, the casting becomes rigidly supported and the surfacing operation can be completed. The mandrel can be secured for machining by a collet or held between centers.

How it's done:

A metallic mold is made in which elastomeric materials can be molded into functional mandrel sleeves. The diameter of a sleeve is 0.010 to 0.015 inch smaller than the cast hole and the length may be $\frac{1}{8}$ inch longer. As the length is reduced by tightening a nut, the diameter increases, with the volume of the sleeve remaining constant. As the pressure of the compressed

sleeve increases, the casting becomes secure on the mandrel. The soft sleeve yields to conform closely to the rough surface of the casting and in so doing finds an average inside diameter or contour; therefore, rough cast wall thicknesses will be nearly equal across a diameter. This effect can be construed to approximate automatic centering of hollow cylindrical shapes.

Notes:

1. This method was used to grind hollow cylindrical magnets. An aluminum mold was made for casting the sleeves, which in this case were silicone RTV. Other materials that could be used include PVC plastisols, vulcanized rubber, and polyurethane.
2. This method could be used in the production of any cylindrical object. Since the sleeve can be reused, only the initial preparation of the mold and elastomer sleeve would require appreciable time.
3. This information is complete in itself. It is presented here for its potential value to the reader.

(continued overleaf)

4. Comments concerning this innovation may be directed to:

Sandia Office of Industrial Cooperation
Org. 3413
Sandia Laboratories
Post Office Box 5800
Albuquerque, New Mexico 87115
Reference: B68-10318

Patent status:

No patent action is contemplated by AEC or NASA.

Source: John A. Rohrer
(SAN-10021)