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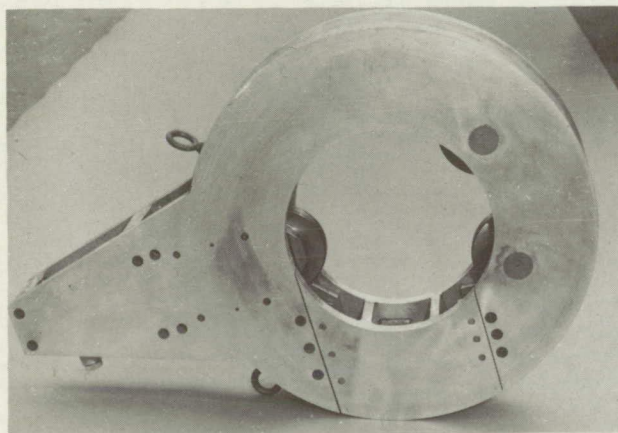
Brief 69-10305

NASA TECH BRIEF

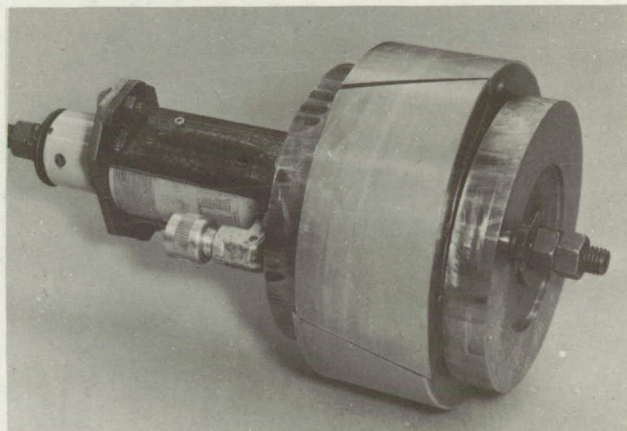


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Repair of Weld Defects in Thin-Walled Stainless Steel Tubes



External Planisher



Internal Backup Mandrel

A hand-operated tool has been developed for the repair of weld defects, such as weld peaking and offset, in large-diameter (8-inch), thin-walled stainless steel tubes. The tool consists of a three-roll external planisher and an internal backup mandrel, both hydraulically pressurized by hand pumps, and an external air-pressurized restraining mandrel, which keeps the tube from turning during the planishing operations.

The first step in the procedure consists of installing the three-roll planisher on the tube to be repaired and locating the backup mandrel at the weld seam in the defective area. The restraining mandrel is then inserted over the tube and air-actuated to keep the tube from turning. Sufficient hydraulic pressure is applied to both the backup mandrel and the planisher (before inserting spoke bars in the latter) to permit the operator to perform the planishing operation.

Tube specimens were intentionally welded so as to contain weld offset and peaking simulating production

parts with such defects. Use of the planishing tool on these specimens, in every instance, brought the weld joints within the specified tolerance. Subsequent X-ray examination of the repaired tubes showed no cracking or malformation of the metal.

The tool not only provides a new, inexpensive method for correcting the weld defects in thin-walled tubing, but also reduces the sophistication required in aligning tube ends and controlling weld distortion. It should be a useful, as well as a corrective, tool for the occasional inadequate tube weld that may occur even with precision-welding equipment.

Note:

Documentation is available from:
 Clearinghouse for Federal Scientific
 and Technical Information
 Springfield, Virginia 22151
 Price \$3.00
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(continued overleaf)

Patent status:

No patent action is contemplated by NASA.

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