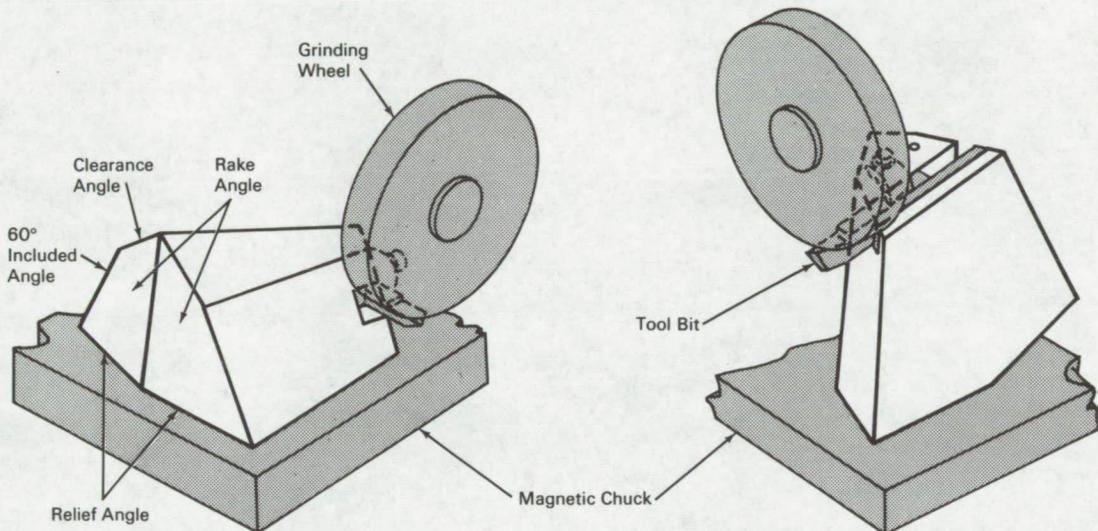


# NASA TECH BRIEF



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## Multisurface Fixture Permits Easy Grinding of Tool Bit Angles



GRINDING RELIEF ANGLE

GRINDING RAKE ANGLE

### The problem:

Cutting 60° included-angle threads on the shoulders of stainless-steel fittings on a production basis requires frequent grinding, resharping, and positioning of the threading tool bit. Much time is consumed in restoring the cutting, rake, relief, and clearance angles and in repositioning the restored tool for the thread cutting operation.

### The solution:

A fixture with tool holder, made with seven reference surfaces, that permits accurate grinding and finishing of right- and left-hand single point threading tools, including clearance and relief angles. All angles are ground by changing the fixture position to rest at various reference angles without removing the tool from the tool holder.

### How it's done:

A heavy, solid steel block is machined to a geometry that leaves it with seven reference surfaces and an eighth that is further machined to accommodate an overarm-clamp tool bit holder. The fixture is placed on an electromagnetic chuck that can be energized to hold it rigidly in place in any desired position.

The three surfaces that relate to the 60° included angle are duplicated symmetrically in mirror-image fashion on opposite sides of the block, in order to accommodate both right- and left-hand tools. A single surface is used for establishing the relief angle for both right- and left-hand tools.

### Notes:

1. The fixture is hardened and polished to assure perfectly flat critical surfaces.

(continued overleaf)

2. Inquiries concerning this invention may be directed to:

Technology Utilization Officer  
Marshall Space Flight Center  
Huntsville, Alabama, 35812  
Reference: B66-10171

**Patent status:**

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C., 20546.

Source: C. R. Jones  
of North American Aviation, Inc.  
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Marshall Space Flight Center  
(M-FS-586)