

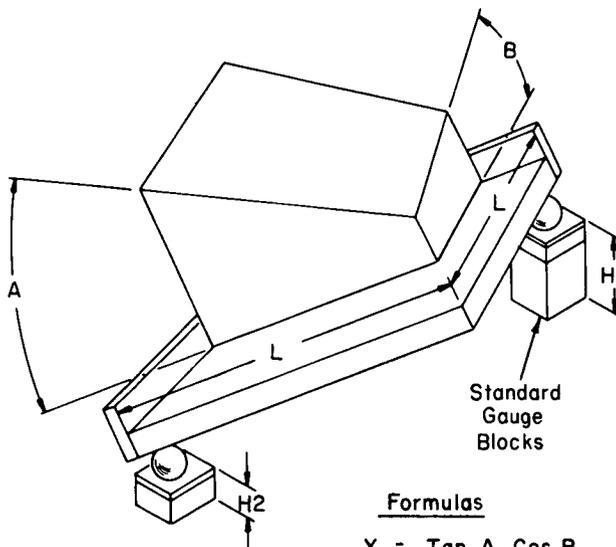
# NASA TECH BRIEF

## Manned Spacecraft Center



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### Three-Point Compound Sine Plate Offers Cost and Weight Savings



A = Given Angle  
 B = Given Angle  
 H1 } Height of Lift  
 H2 }

#### Formulas

$$X = \tan A \cos B$$

$$H1 = L \sqrt{\frac{X^2}{X^2 + 1}}$$

$$H2 = L (\sin B \cos A)$$

Note: H1 & H2 interchangeable for  
 Right or Left Hand Parts

A new work piece adjustment fixture reduces the size, weight and set-up complexity of alignment platforms used in metal blank machining. The fixture is a sine plate aligning surface supported by a three-ball suspension unit.

Current methods for rotation of calculated angles involve the use of a double hinged compound sine plate or sine bar and plate. These are heavy and bulky. The three-point sine plate is lightweight, weighing approximately 4 pounds as compared to 65 pounds for a comparable double hinged plate. The three-point sine plate is very compact.

The new fixture reduces set-up time through use of the same mathematical formulas for both right-hand and left-hand parts. The complexity of the relationships is less than that of current methods.

The time, weight and space savings add up to cost savings for designers and manufacturers of machine tools and measuring equipment.

#### Note:

Requests for further information may be directed to:

Technology Utilization Officer  
 Manned Spacecraft Center, Code JM7  
 Houston, Texas 77058  
 Reference: TSP72-10118

#### Patent status:

No patent action is contemplated by NASA.

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