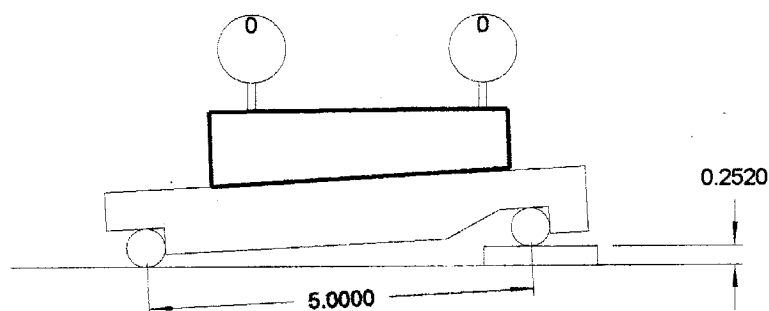


Using a Sine Bar to Inspect a Taper



1. Increase or decrease the size block stack until the indicator reads 0 across the top of the part.
2. Divide the final total block by five. This is for the standard 5" sine bar and will give you the sine of the included angle. The sine is the ratio of the side opposite divided by the hypotenuse.
3. Convert the sine of the angle to the actual angle by using a scientific calculator or a look up trig table. This will be the included angle of the part.
4. Use the formula $\tan \frac{1}{2} A = \frac{TPF}{24}$ to find the Taper Per Foot of the part. Divide this value by 12 if you need the Taper Per Inch.

Example

Step 1. $\frac{.252}{5} = .0504$ this is the block height divided by 5 and is the SINE of the angle.

Step 2. Convert the sine to an angle, in this case $2^{\circ} 53' 20''$. This is the INCLUDED angle.

Step 3. Use the formula $\tan \frac{1}{2} A = \frac{TPF}{2 \times 12}$ to find the Taper Per Foot of the actual part and see if it matches the specification in Machinery's Handbook.

Step 4. If the included angle is $2^{\circ} 53' 20''$ then $\frac{1}{2} A$ is $1^{\circ} 26' 40''$ and the tangent of that angle is .0252 and is used in the formula as follows

$\tan \frac{1}{2} A = \frac{TPF}{2 \times 12} = .02521 = \frac{TPF}{24} = .02521 \times 24 = .6051$ TPF. Machinery's Handbook calls for the TPF of a #3 Morse taper to be .60235 so the tape is slightly steeper than called for so a small adjustment would have to be made to bring it to specification.