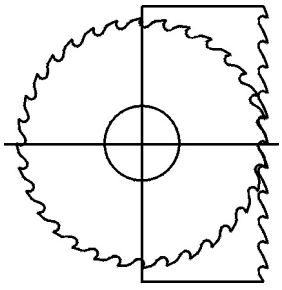
TKT Engineering Inc.

SINE BAR PLUMB LEVEL

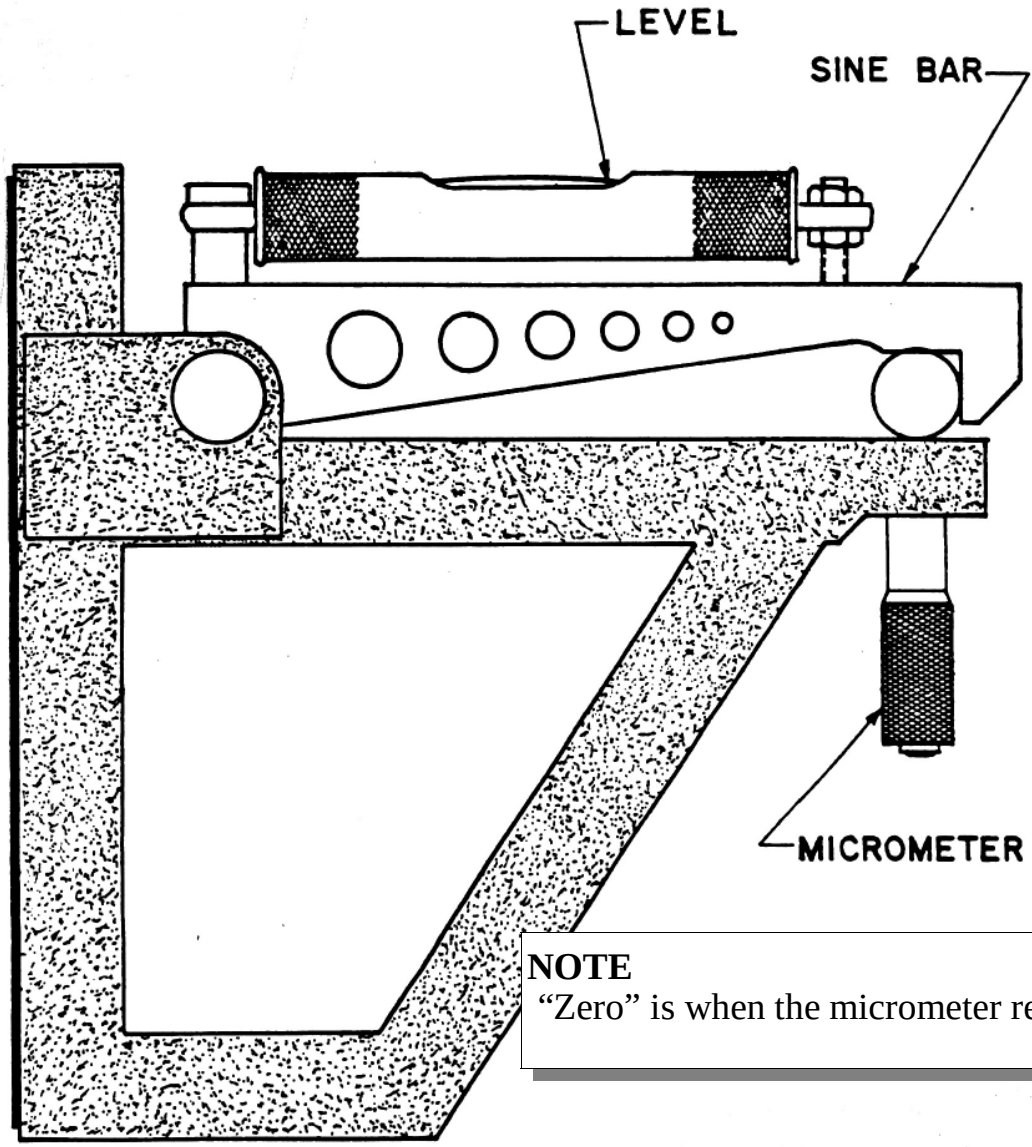


5858 - 179 Street
Surrey, B.C.
www.thinkerf.com
V3S 4J9
CANADA

Tel. (604) 880-1705
Fax: (604) 648-8012

USE OF SINE BAR

This instrument may be used to obtain the desired applied force between bandsaw and saw guide in initial installations or to determine the applied force in an existing installation. The device is a combination of three well known instruments, the precision level, the micrometer, and a 5 inch sine bar.



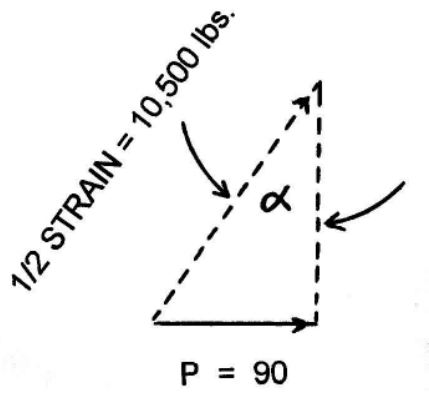
NOTE
"Zero" is when the micrometer reads 0.200"

EXAMPLE (1)

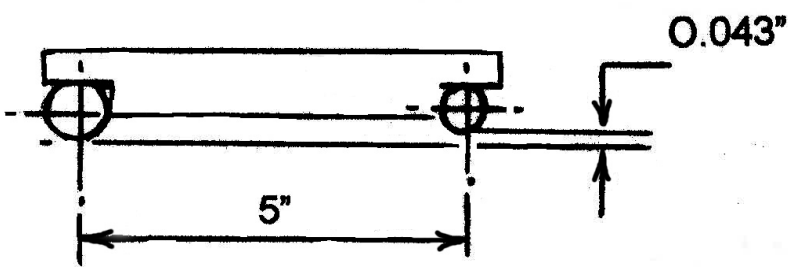
The table of saw guide pressure in the owner's manual shows 90 lbs. applied for a 5ft. machine. Assume applied strain equals 21,000 lbs. which gives a tension force (STRAIN) of 10,500 lbs. in the saw both front and back of mill.
2

The vertical and horizontal components of force may be combined into a slope triangle, and the sine of this angle equals:

Step 1: $\frac{P}{1/2\ STRAIN} = \frac{90}{10{,}500} = 0.0086$



Step 2: Multiply this by 5 to obtain the correct gauge setting for the 5" sinebar which equals 0.043"
(0.0086 x 5") = 0.043"



Place the square portion of the instrument against the saw blade and adjust wheels or guides until instrument is level. This will now provide the correct guide pressure for the strain being used.

EXAMPLE (2)

Low strain application, strain = 12,000 lbs.
Sine = 90 / 6000 = 0.0150

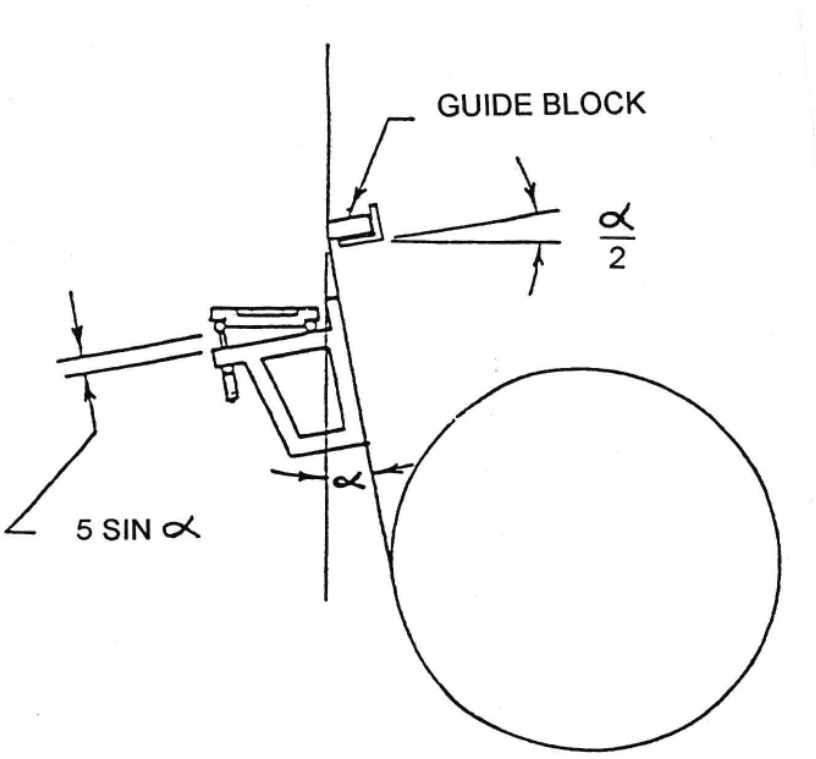
The sine bar gauge setting should be 0.0150 x 5 equals 0.0750”

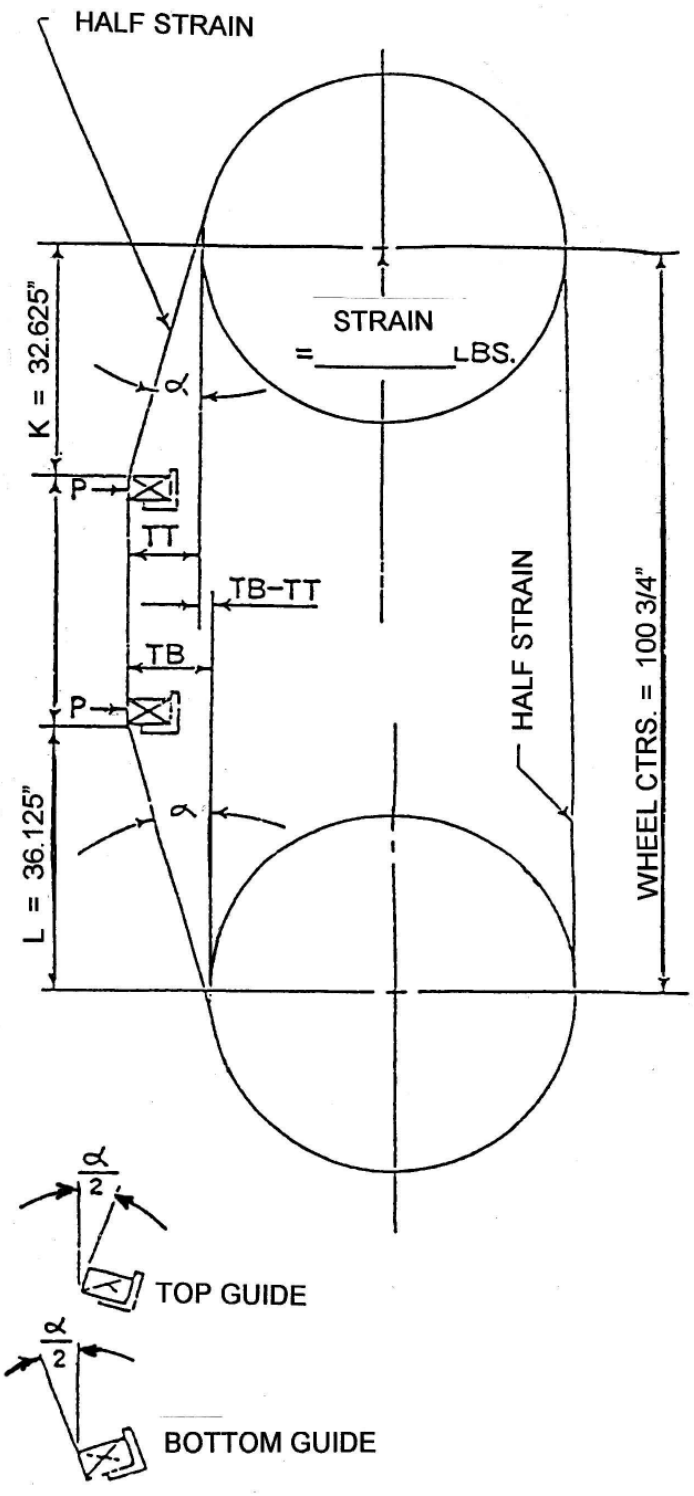
EXAMPLE (3)

Step 1 Check guide pressure on 8 ft. Headrig at 40,000 lbs. strain.
Set instrument on saw and adjust to read level.
For example, measured sine bar height = 0.037”

Step 2 Calculate pressure on guides = $\frac{0.037}{5”}$ x 20,000 lbs. = 148 lbs.

Guide pressure table suggests 170 lbs., therefore guide offset is not enough.





BANDMILL SIZE	RECOMMENDED GUIDE PRESSURE 'P' LBS
5	90
6	110
7	130
8	150
9	170

SINE = 'P'
HALF STRAIN

$= \frac{90 \text{ LBS.}}{10500 \text{ LBS.}} = .0086$

TT = SIN K = 0.281

TB = SIN L = 0.311

TB - TT = 0.030

SINEBAR SETTING

= 5 SIN = 0.043

TO FIND EXISTING GUIDE PRESSURE 'P'

$\frac{\text{SINE BAR SETTING}}{5} \times \text{HALF STRAIN}$

Calibration & Use of Sine Bar

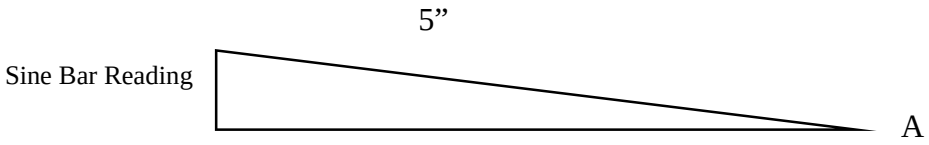
Readings

This Sine Bar has been calibrated so that the measuring surface is plumb when the level bubble is centered and the micrometer is set to 0.200 inches. The distance between the sine bar rolls is 5 inchs. This arrangement allows both positive and negative angles from plumb to be measured. The reading from the sine bar is

reading = (micrometer reading - 0.200") per 5"

Slopes should be recorded in the form of, for example, 0.011" per 5".

Angles



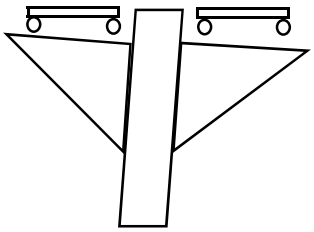
The angle, A, of the slope is

A = arcSin(Reading/5) or Sin(A) = Reading/5

Angle (deg.)	0.5	1.0	1.5	2.0
Sine Bar Reading (in.)	0.044	0.087	0.131	0.175

Calibration

The Sine Bar is a self-checking instrument. Place the Sine Bar on one side of a part with two parallel sides, such as a drill press spindle or glass window. If the Sine Bar measures a slope of 0.005" per 5" on one side, the slope on the other side should be -0.005" per 5" on the other.

Negative Reading  Positive Reading

Calibrated By: _____ Date _____

TKT Engineering Inc.
5858 179 Street, Surrey, B.C.
V3S 4J9 Canada
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E-Mail thinkerf@thinkerf.com