

MP101 Manufacturing Processes

Precision Measurement Lab

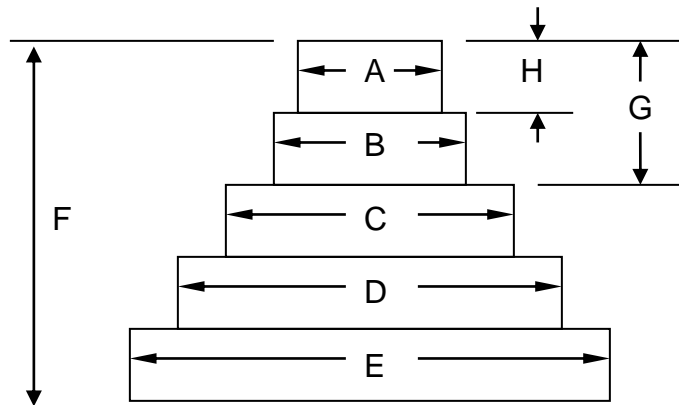
Name: _____ Lab Section: _____ Date: _____

OBJECTIVE: To introduce the student to various common precision measurement instruments used in the manufacturing industry, specifically in the machine shop setting. To familiarize the student with reading measurement instruments and the general practice of their use.

EQUIPMENT:

Inch Dial caliper
 150mm Metric Dial caliper
 Vernier caliper
 Digital caliper
 Vernier height gage
 1" micrometer
 2" micrometer
 25mm metric micrometer
 Precision gage blocks
 5" Sine bar
 Surface finish gage
 Depth micrometer

STEPPED CYLINDER#_____

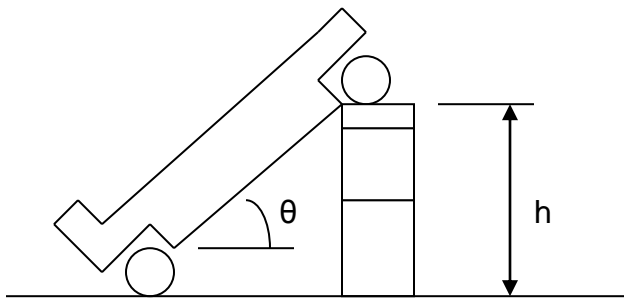


PROCEDURE:

1. Measure the dimensions of the stepped cylinder with the instruments indicated and record to the nearest .001" or .02 mm as appropriate in the following table.

	1" micrometer	dial caliper	vernier caliper	metric caliper	2" micrometer	height gage	Depth Micrometer	digital caliper
A		xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	
B	xxxx		xxxx	xxxx	xxxx	xxxx	xxxx	
C	xxxx	xxxx		xxxx	xxxx	xxxx	xxxx	
D	xxxx	xxxx	xxxx		xxxx	xxxx	xxxx	
E	xxxx	xxxx	xxxx	xxxx		xxxx	xxxx	
F	xxxx	xxxx	xxxx	xxxx	xxxx		xxxx	
G	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx		xxxx
H	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx		

2. Surface Finish Gage: Inspect the finish of a round stock and a flat stock sample as specified by the instructor. What surface finish does each most closely resemble?
 - a. round stock -
 - b. flat stock –
3. Calculate the height of the gage blocks required for the angle for the two cases of θ . Set up the first set of blocks and check the angle with a protractor. Note: 5" sine bar



$$\theta = 42^\circ \quad h = \underline{\hspace{2cm}}$$

$$\theta = 55^\circ \quad h = \underline{\hspace{2cm}}$$

4. Measure the diameter of the reduced section of the tensile specimen. The size specification is $.505 +.001/-.000$. Is the part within tolerance?
5. Using the metric micrometer, what is the diameter of the tensile specimen (mm)?
6. Review the use and capability of the optical comparator.

MP101 Measurement Lab by Robert Arredondo is licensed under the Creative Commons Attribution 4.0 International License.
To view a copy of this license, visit http://creativecommons.org/licenses/by/4.0/deed.en_US.



[AMPed NH](#) is sponsored by a \$19.97 million grant from the U.S. Department of Labor, Employment & Training Administration TAACCCT Grant #TC-22504-11-60-A-33. The Community College System of NH is an equal opportunity employer, and adaptive equipment is available upon request to persons with disabilities.

This workforce solution was funded by a grant awarded by the U.S. Department of Labor's Employment and Training Administration. The solution was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites, and including, but not limited to accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability or ownership.