Laboratory Worksheet 6

Testing of Thread with the Three-Wire Method

Names: _____ Group No.: _____

_____ Date Started: _____

(Last Name, First Name MI.) Date Completed: _____

(yy/mm/dd)

Instructor: Engr. Nico O. Aspra, M.Eng., RMP, LPT

*Note: When printing the worksheet, use long bond paper (8.5 in × 13 in). Print the Data Collection up to the Analysis section **back-to-back** on a single sheet of paper. Print the Assessment Sheet on a separate sheet and staple it at the back of this worksheet.*

6.1 Data Collection and Calculations

Record and compare the micrometer readings obtained using the three-wire method with the theoretical values. This will help evaluate the accuracy of your thread cutting and identify any deviations from the expected dimensions.

Table 6.1: Tabulation of Micrometer Readings Over Wires

Trial 1	Trial 2	Trial 3	Trial 4	Trial 5	Average

Table 6.2: Three-Wire Method Measurement and Evaluation

Parameter	Equation	Value	Unit
threads per inch	n		TPI
major diameter	D_o		in
pitch	$P = \frac{1}{n}$		in
wire diameter	$W \approx 0.57735P$		in
theoretical value over wires	$M_t = D_o + 3W - 1.5155P$		in
deviation	$M_{\text{ave}} - M_t$		in

Solutions

Write down all the corresponding solutions in the space provided.

Solutions

6.2 Analysis and Discussion

Reflect on the exercise and draw upon both your experience and the data gathered to respond to the following questions. Support your answers with specific examples from your observations.

Question 1

How close was your actual micrometer reading (M) to the computed value (M_t)? What might explain any difference?

Question 2

What difficulties did you encounter when positioning the wires and using the micrometer? How did you address them?

Question 3

Is the three-wire method more reliable than using a thread pitch gauge alone? Why?

Question 4

Why must thread accuracy be verified in precision parts? What could go wrong if threads are out of spec?

Question 5

If your reading was outside tolerance, what steps would you take before accepting or rejecting the part?

Assessment Sheet

Note: This page must be stapled at the back of your laboratory worksheet.

Individual Contribution Declaration

In this section, list and briefly describe each member's contributions to the activity. Itemize the specific tasks performed and assign a corresponding percentage to each member. The combined percentage must total 100%.

Name	Designation (Leader/Member)	Individual Accomplishments	%	Signature
		Total	**100%**	

Academic Honesty Statement

I/We hereby certify that I/we have written and developed this report. I/We affirm that the report I/we am/are submitting as part of the requirements of this course is original and not plagiarized. My/Our signature/s below constitute/s my/our pledge that I/we have fully complied with Bicol University's policy on academic integrity. I/We understand that academic dishonesty will not be tolerated and that, if such instance/s are found and proven in this submitted work, a final grade of 5.0 will automatically be given to me/us, and I/we will be subjected to disciplinary action/s sanctioned by Bicol University.

Signature over printed name (Group Leader)

Do not write beyond this point. This section will be completed by the instructor.

Performance Assessment Rubric

(For instructor use only)

Criteria	4 – Exemplary	3 – Proficient	2 – Developing	1 – Beginning	Score
Understanding of Task	Demonstrates complete understanding of the objectives, theory, and relevance of the activity	Shows good grasp of the task with minor conceptual gaps	Basic understanding with some confusion about the purpose or process	Limited or incorrect understanding of the task's goal	
Execution Accuracy	All procedures and tools are correctly used with high precision and consistency	Most steps are followed correctly with minor errors or inefficiencies	Several key steps missed or tools used with noticeable inaccuracy	Process poorly executed; improper use of tools or procedures	
Measurements	Measurements are accurate, clearly recorded, and well-analyzed against design targets	Mostly accurate data with partial analysis or incomplete comparison	Data is somewhat inaccurate or poorly explained	Lacks measurements or data is irrelevant or incorrect	
Reflection and Analysis	Deep insights, thoughtful evaluation of outcomes, and strong suggestions for improvement	Reflection shows good understanding with reasonable suggestions	Limited self-assessment or vague comments	Little to no reflection; fails to engage with outcomes	
Presentation	Report is highly organized, clear, and free of major errors in structure or expression	Report is generally clear and well-organized with minor lapses	Report lacks clarity or organization; some confusion in formatting or writing	Disorganized or incomplete submission; difficult to follow	
				Total	