Laboratory Worksheet 5

External Thread Cutting

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.*

5.1 Data Collection

Record and compare the calculated values with your actual dimensions. This section will help assess the accuracy of your threading operation and identify any deviations from the expected results.

Table 5.1: Comparison of Calculated and Actual Thread Dimensions

Dimension	Calculated Value	Actual	Remarks
pitch, P			
thread depth, h			
major diameter, D_o			
minor diameter, D_i			
thread relief diameter, D_r			

* The "Remarks" column will be filled in by your instructor based on inspection.

5.2 Calculations

In this section, compute the required values necessary for the external thread cutting operation. Show your complete solutions and label all units clearly. Use the Unified Thread Standard (UTS) chart to identify the number of threads per inch (TPI) based on your thread specification. Then, solve for the following:

(a) pitch, p

(b) thread depth, h

(c) minor diameter, D_i

Solutions

Write down all the corresponding solutions in the space provided.

Solutions

5.3 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

Were your calculated values (pitch, thread depth, and minor diameter) close to the actual measurements? If not, what do you think caused the discrepancy?

Question 2

What challenges did you encounter while aligning the compound rest to the 29° angle and setting up the threading tool? How did this affect the thread profile?

Question 3

Was the threading dial indicator easy to use and reliable? How did you ensure consistent engagement of the half-nut for each pass?

Question 4

Was the thread fit acceptable when tested with a nut or the three-wire method? If not, what adjustments could be made to improve it?

Question 5

Reflect on your overall performance in this activity. What specific skill or concept do you feel you improved the most?

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	