Laboratory Worksheet 2

Lathe Dial Movements and Backlash

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.*

2.1 Data Collection

The data gathered from your activity will be recorded and analyzed in this worksheet. These measurements will be used to assess the accuracy, precision, and consistency of lathe dials. By comparing results from different machines, you will gain insights into how wear, calibration, and machine model differences influence tool movement and machining performance.

Table 2.1: Recorded Graduations, Backlash, and Corresponding Linear Movements of Lathe Dials of LM# _____, Model _____ (First Machine)

Lathe Dial	Graduation	Backlash	Linear Movement (mm)		
			1 rev	2 revs	5 revs
Compound Rest					
Cross Slide					
Carriage Handwheel					

Table 2.2: Recorded Graduations, Backlash, and Corresponding Linear Movements of Lathe Dials of LM# _____, Model _____ (Second Machine)

Lathe Dial	Graduation	Backlash	Linear Movement (mm)		
			1 rev	2 revs	5 revs
Compound Rest					
Cross Slide					
Carriage Handwheel					

2.2 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.

Solutions

How do the recorded graduations of each dial compare to the actual linear displacement? Were there discrepancies between the expected and measured movements?

Question 2

Calculate the ratio of dial graduations to the corresponding linear movement for each control. Does this ratio remain consistent across different dials? If not, what factors might contribute to the variation? Use the equation below for reference:

$$\text{Ratio} = \frac{\text{Graduation per revolution (mm)}}{\text{Measured linear movement (mm)}}$$

Question 3

Did you observe any differences in backlash or dial readings between the two lathe machines? What do you think causes these differences?

Question 4

Why is it important for machinists to understand dial readings, backlash, and tool displacement? In what ways does this knowledge contribute to greater machining accuracy, repeatability, and overall efficiency?

Question 5

Why is it important for machinists to understand dial readings, backlash, and tool displacement? In what ways does this knowledge contribute to greater machining accuracy, repeatability, and overall efficiency?

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	