Laboratory Worksheet 7

Drilling, Boring, and Facing of the Flange

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.*

7.1 Data Collection

Record and compare the following measurements based from your plans and after the machining operation. These values will help verify the accuracy of your drilling, boring, and facing procedures.

Table 7.1: Comparison of Machined Dimensions with Design Specifications

Dimension	Specification	Actual	Deviation	Remarks
Internal diameter				
Thickness				
Depth of relief				
Surface finish quality				

* The surface finish quality should be rated as rough, grooved, matte, glossy, or mirror-like depending on the observed surface quality.

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

7.2 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

What was the purpose of using a center drill before the twist drill? How does it affect the accuracy of the drilled hole?

Question 2

What are the risks of not boring the hole if the twist drill nearly matches the desired diameter? Discuss the potential consequences on the fit and function of the assembly.

Question 3

Why is it necessary to add a small allowance before parting the flange? How does this practice affect the final flange thickness and surface finish?

Question 4

How did you ensure that the facing operation on both sides of the flange resulted in parallel and flat surfaces? What methods or visual references did you use to align the remounted workpiece?

Question 5

Based on your experience in this activity, what improvements would you suggest in terms of setup, process sequence, or tool usage to enhance precision and 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	