# Turning to Dimension with Center to Center

| 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.*

## 4.1 Data Collection

The data collected in this activity will be recorded and analyzed in this section. These measurements will help assess the relationship between dial graduation and actual material removal during the turning process. By tracking each cut, students will gain insights into how tool advancement, dial accuracy, and depth control affect the final dimensions of the workpiece. Additionally, this data will allow students to evaluate consistency in material removal and refine their technique for achieving precise dimensions.

Table 4.1: Turning Process Measurements

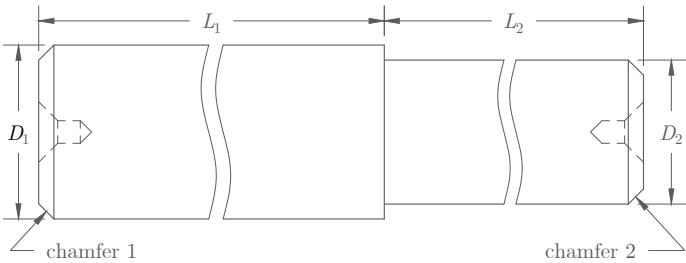| Measurement | Cut # | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| diameter before the cut, $D_i$ | | | | | | | | | | |
| diameter after the cut, $D_f$ | | | | | | | | | | |
| dial reading | | | | | | | | | | |
| removed diameter, $D_i - D_f$ | | | | | | | | | | |



Figure 4.1: Final product plan used as a reference for dimensional measurements recorded in Table 4.2.

Table 4.2: Comparison of Machined Dimensions with Design Specifications

| Dimension | Specification | Actual | Deviation | Remarks |
|---|---|---|---|---|
| diameter 1, $D_1$ | | | | |
| diameter 2, $D_2$ | | | | |
| length 1, $L_1$ | | | | |
| length 2, $L_2$ | | | | |
| chamfer 1 | | | | |
| chamfer 2 | | | | |

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

## 4.2 │ 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.

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**Question 1**

Why do you think it's necessary to align the centers of the lathe? What do you think will happen if the centers are misaligned?

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**Question 2**

How did you compute the required crossfeed increment to achieve the desired dimensions? Show your solution in the space provided.

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**Question 3**

Why is maintaining a fixed reference on the crossfeed dial important throughout the turning process? What potential errors could occur if the reference is reset after cutting?

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**Question 4**

Why is it recommended to leave a thin allowance for a final finish cut rather than cutting directly to the final size? How does this affect the accuracy and surface quality of the workpiece?

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**Question 5**

Based on your recorded measurements, did the actual material removal match your expected depth of cut per dial reading? If there were discrepancies, what factors do you think contributed to them?

# 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.*

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## 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 | |