
Laboratory 3 – IntelliCAD: Flange Mount Bearing
Assigned October 3-6 and October 14*
Due October 11-13, and October 21*
(respectively, *see Section V for details on submission and dates)

I — Introduction:

Have you ever had an idea about a new product that could make a certain task easier? How did you get your idea across to other people? What were the first things you did to make your idea clearly communicated to your audience? Imagine you are having a cup of coffee with a friend, and you decide to share your idea about a product with him/her. After talking about the idea for a while, to clarify, you will naturally draw a picture or a diagram to show what the product would look like. You have heard the saying “a picture is worth a thousand words”, well, in engineering, a good drawing is worth even more! Technical drawings or engineering drawings are important in conveying useful information to other engineers or machinists in a standard, acceptable manner to allow the readers of these drawings to visualize what the proposed product would look like. More significantly, information such as the dimensions of the proposed product, or what it would look like when viewed from the top or from the side or the front is provided. The drawings will also specify what type of material is to be used to make this product. If you are in Aerospace, Mechanical, Biomedical, or the Efficient Energy Generation and Conversion stream of the Sustainable and Renewable Energy Engineering program, as part of Year 2 a whole course (MAAE 2001) will be dedicated to studying in detail elementary descriptive geometry and various engineering drawing techniques.

II — Problem Statement:

Imagine that you have been given the job to design a “bearing flange mount”. Your hand-drawn conceptual design sketch might look something like the drawing shown in Figure 1. Free-hand sketches like these are often used in the initial stages of a project because they can be done quickly and modified easily as the design evolves. Eventually sketches have to be turned into proper engineering technical drawings if the part is to be manufactured. In this laboratory assignment, the flange mount bearing design (described in Chapter 15 of the textbook and shown as a sketch below) is to be transformed into a technical drawing suitable for manufacturing.

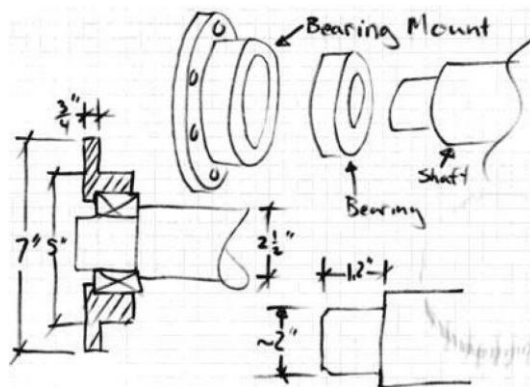


Figure 1: Flange mount and bearing conceptual design.

III — Steps and Calculations:

Using IntelliCAD create orthographic working drawings of the bearing flange mount and shaft. You may find it very helpful to read and follow Chapter 15 in your textbook.

IV — Report Requirements:

Submit your working drawings of the bearing mount and shaft. Use the drawing title block to be found on WebCT as a template. Make sure the title block includes your name and student ID number. In addition, include a title page using the format discussed in Laboratory 1 (but a full report is not required, just the title page and the working drawings).

V — Submission and Timing:

Your report is to be submitted to the Teaching Assistant within the first 30 minutes of your next laboratory period, except if your lab was on Monday October 3. Because Monday October 10, 2011 is Thanksgiving, the University is closed. For those with labs normally held on Monday, this laboratory is due no later than 16:30 on Tuesday October 11, 2011 in the ECOR 1010 slot of the orange cabinet located outside of 3135 ME.

Important Note: Friday October 7, 2011 is University Day (there are no undergraduate classes). For students with labs normally held on Friday, this laboratory is assigned on Friday October 14th, 2011, and will be due within the first 30 minutes of your next laboratory period, which is October 21, 2011.

LATE SUBMISSIONS WILL NOT BE ACCEPTED.

VI — Marking:

Laboratory submissions will be marked on a 10-point scale: 9-10 (excellent); 7-8 (good); 5-6 (marginal); less than 5 (fail). **Be sure that you are familiar with the University's policy on plagiarism and academic integrity. Your instructors are obligated to report all suspected violations to the Associate Dean's office for investigation.**