Lab 02: Fixturing

I. Purpose

A.) Provide an overview of general fixturing considerations for an artifact.
B.) Provide experience with designing, selecting, and evaluating potential fixturing methods to constrain an artifact.
C.) Provide experience in the construction of a fixture.

II. Practice

Go to the course website and download a copy of the current lecture notes on fixturing. Bring these notes to the lab to use in evaluating your designs.

Your lab team will be divided into two sub-teams to design and produce a multipurpose fixture to allow a drill press to perform a drilling and counter-boring operation on the two small holes on the back side of the bearing block parts. There are two similar parts to be constrained: a left and a right hand bearing block. Your sub-team's design should follow as many of the guidelines for tooling design as is practicable, and still be effective. The lab instructor will assist in the safe operation of the equipment during the construction efforts. Each team member is expected to contribute to a phase of the design, construction, and/or the evaluation of the fixture; and to the safe operation of equipment to produce the tooling.

The laboratory activities to be performed are:

A.) Each student should design a fixture using the provided materials for both of the bearing blocks. A sketch with construction and operating notes on EP paper will be sufficient.
B.) Each sub-team will select a fixture design to implement. A brief description of the sub-teams process for selection (1 paragraph for each sub-team) will be required in the laboratory report.
C.) Each sub-team will construct a fixture from the available materials to constrain both the right and left hand bearing blocks. A sketch of the final, constructed design and construction/operation notes for each sub-team will be needed in the finished lab report.
D.) As a full team, each of the final fixtures will be evaluated. The evaluation results for both designs will appear in the finished lab report.

As a team, consolidate all the sub-team and individual efforts into a single laboratory document as described by the lab instructor. This document should include:

a. Cover sheet with title, date, time, and all participating team member names.
b. Summary of process/actions taken by the sub-teams to design, select, construct, and critically evaluate the final fixtures.
c. An illustration and critical evaluation of both constructed fixtures, including recommendations for improvement.
d. Appendix of individual fixture designs from each team member.

Turn in the above materials on the due date (start of the next lab period). Parts (a), (b), and the text portion of (c) should be completed on the computer.

Figure 1. Illustration of Bearing Block.