

Chapter 11

Dimensioning the Bracket Problem

This chapter will cover the following:

- 1. Dimensioning a Multiple View Drawing**
- 2. Placing Center Marks**
- 3. Placing Linear Dimensions**
- 4. Placing Radius Dimensions**
- 5. Placing Diameter Dimensions**

Dimensioning a Multiple View Drawing

When learning how to dimension a multiple view drawing, the goal is to portray a clear and concise visual representation of the part or assembly. A great rule of thumb is to place the dimension in the view in which the part is facing when the machining or construction practice is in progress. For example, if a worker is drilling four 14 mm holes in the top plate of the Bracket, then draw the dimensions in the top view, both the x and y-axis location and the drill diameter. Likewise, in a forged or cast part, add the radius or fillets in the proper view, so the pattern maker can easily read the drawing and make the correct choices. Check every circle, line and arc at the end of the dimensioning process guaranteeing that there are not any missing measurements.

For those new CAD operators with previous experience, you already know that this Bracket is missing the draft angle and the necessary fillets on the edges to prevent a poorly made casting. Manufacturing this part from stock will add an extreme amount of time to the machining process, and therefore a large cost to the finished product. There are additional World Class CAD chapters in other texts that will discuss the intricate steps of designing a cast part, so you can believe for the present that making the Bracket is a process of machining from a solid block of material.

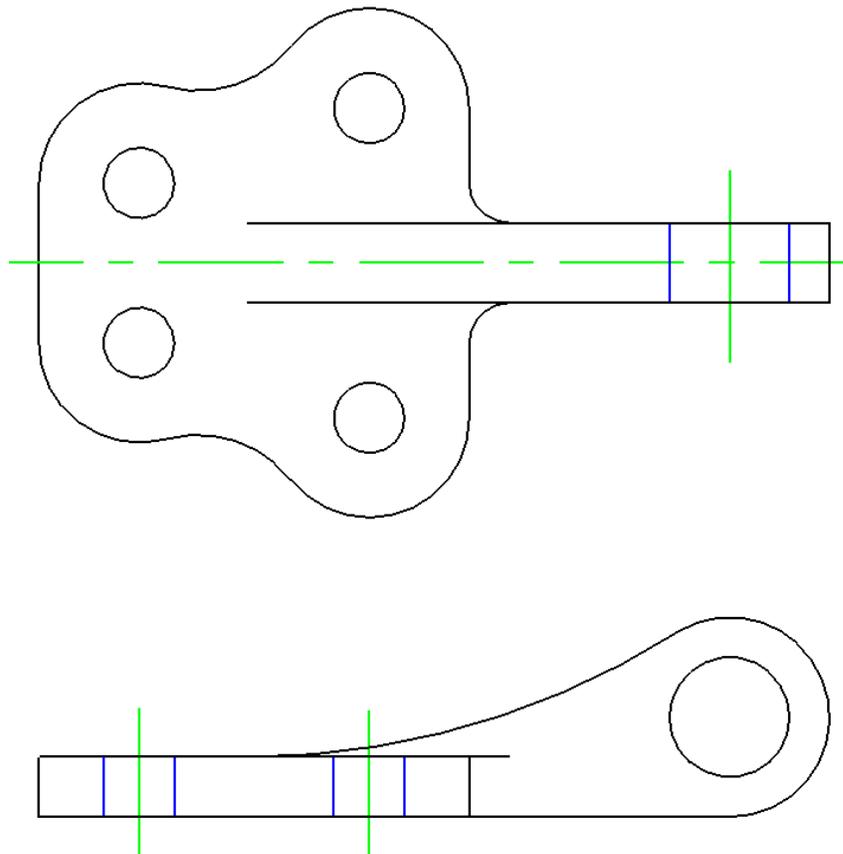


Figure 11.01 – Dimensioning the Bracket Problem

Placing Center Marks on a Multiple View Drawing

Select the Place Center Mark tool from the Radial Dimensions toolbox and the Place Center Mark window will appear. Set the center size to 0.1. Select the Center level from the Level drop box. Now you are ready to place center marks on all four holes in the top view and on the one hole in the side view. To place a center mark, select the circle that you wish to mark, and then click anywhere to place it.

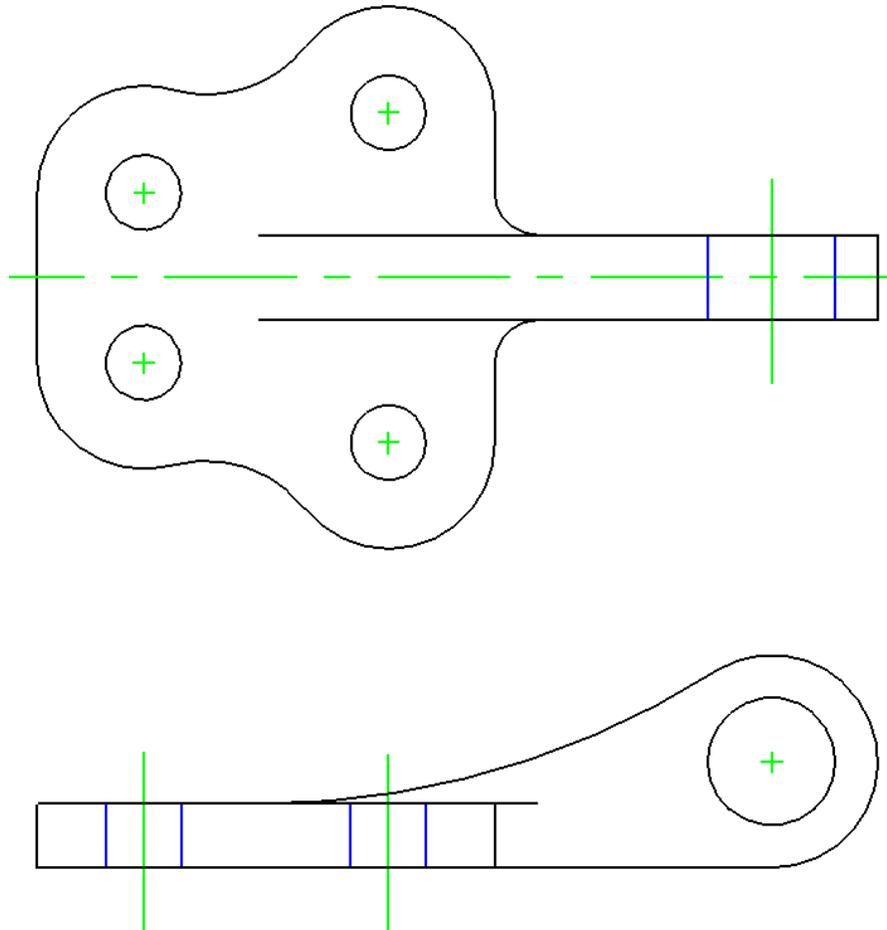


Figure 11.02– Center Marks on the Bracket Problem

Placing Linear Dimensions on a Multiple View Drawing

Before you begin placing dimensions, you may need to change some of the drawing and dimension settings. Select Settings from the menu bar and then Drawing Scale.



When the Drawing Scale window appears, make sure both units are set to inches. Select the Dimension Linear tool from the Dimensioning toolbox. When the Linear Dimensioning window appears, select the magnifying glass next modify the Standard dimension style. The Dimension Style window will appear. Under the Geometry tab, make sure the Width and Height of the Terminators are both set to 0.5. Under Text, set the Width and Height to 0.1. Next, select the Dimension level from the Level drop box. Now you are ready to begin to placing dimensions. Draw a 0.4", 0.8" and 1.55" dimension coming off the centerline of the top view. Then draw 1.6", 2.3", and 3.1" dimensions between the two holes. Add the 0.6" and 0.8" dimensions showing the thickness of the material. Finally, add the 5.9" dimension on the front view, indicating the distance from the front hole to the center of the loop. This completes all the Linear Dimensions.

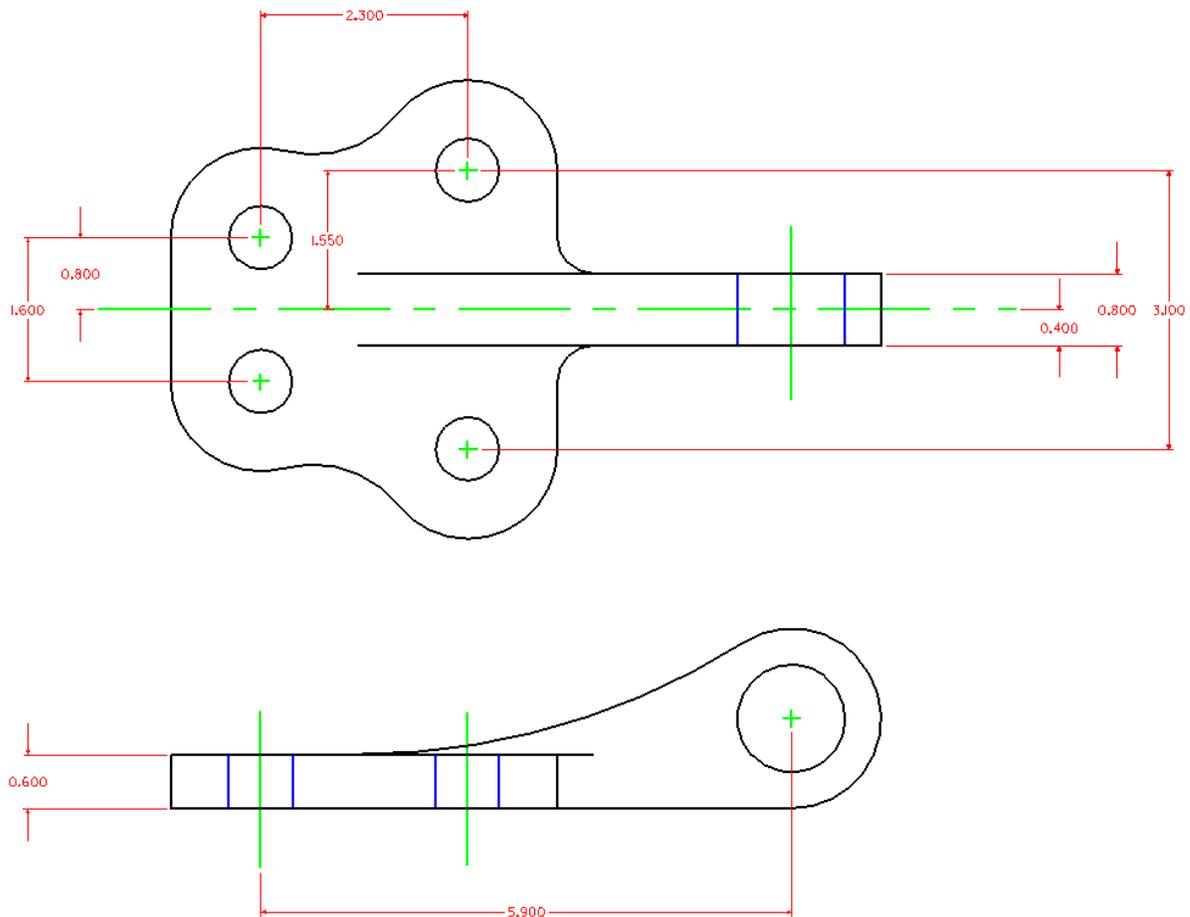


Figure 11.02 – Using the Linear Dimension Tool

Placing Radial Dimensions on a Multiple View Drawing

There are six radial dimensions for the Bracket problem, so you need to identify the four on the top view and two in the front view. Select the Dimension Radial tool on the



Radial Dimension toolbox. In the Dimension Radial window, make sure that the Mode is set to Radius and the Alignment set to View. In Figure 11.03, you can see the arcs shown in magenta. There are 0.4", 1", 1" and 1.2" arcs in the top view, and 1" and 8" arcs in the front view.

On the top view, you probably want to dimension both 1" arcs. Since there are so many curved surfaces, not labeling every arc on one side of the centerlines could mistake the detail for another dimension. Showing a centerline down the middle of the Bracket problem's top view means that whatever you dimension on one side is the same on the other side of the line of symmetry.

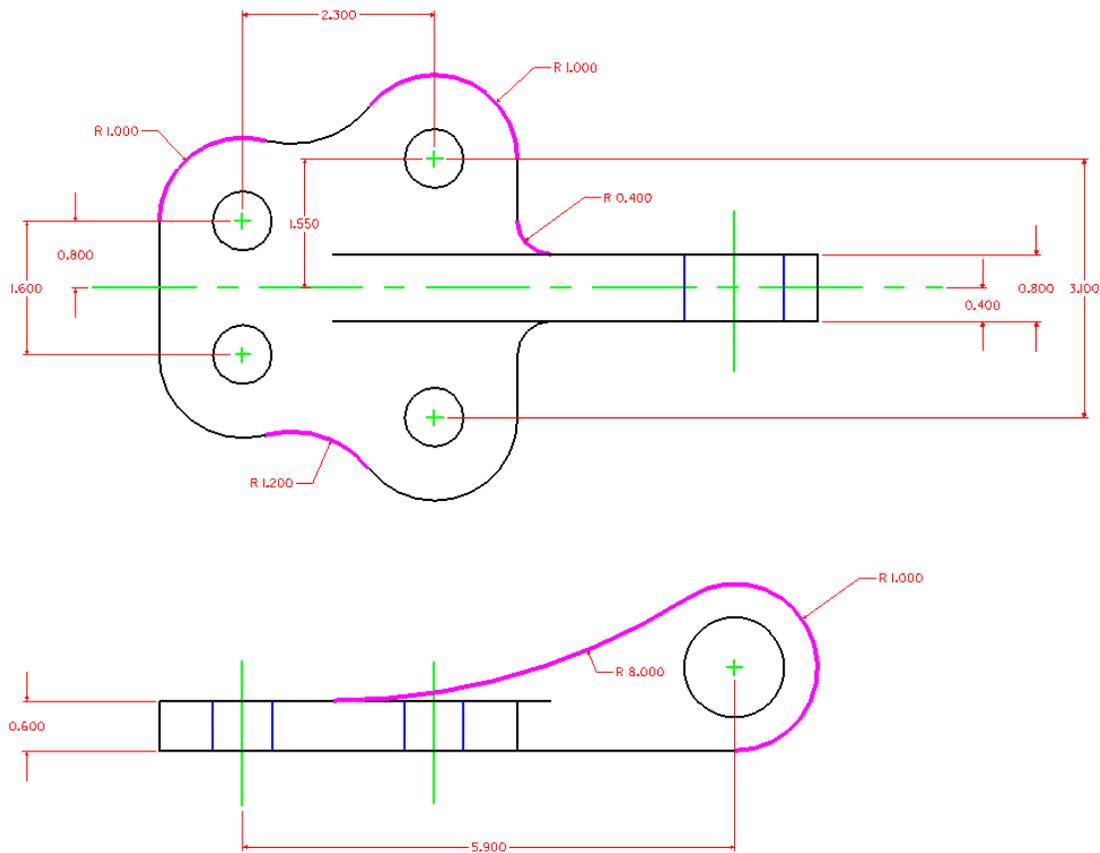


Figure 11.03 – Using the Linear Dimension Tool

Placing Diameter Dimensions on a Multiple View Drawing

There are two diameter dimensions for the Bracket problem. You need to identify the one on the top view and the other in the front view. Select the Dimension Diameter tool from the Radial Dimension toolbox. In Figure 11.05, you can see the two circles shown in magenta. There are 0.707" and 1.2" circles to dimension. After placing both dimensions in the drawing, you will want to add the text "4 holes" to the 0.707" hole diameter.



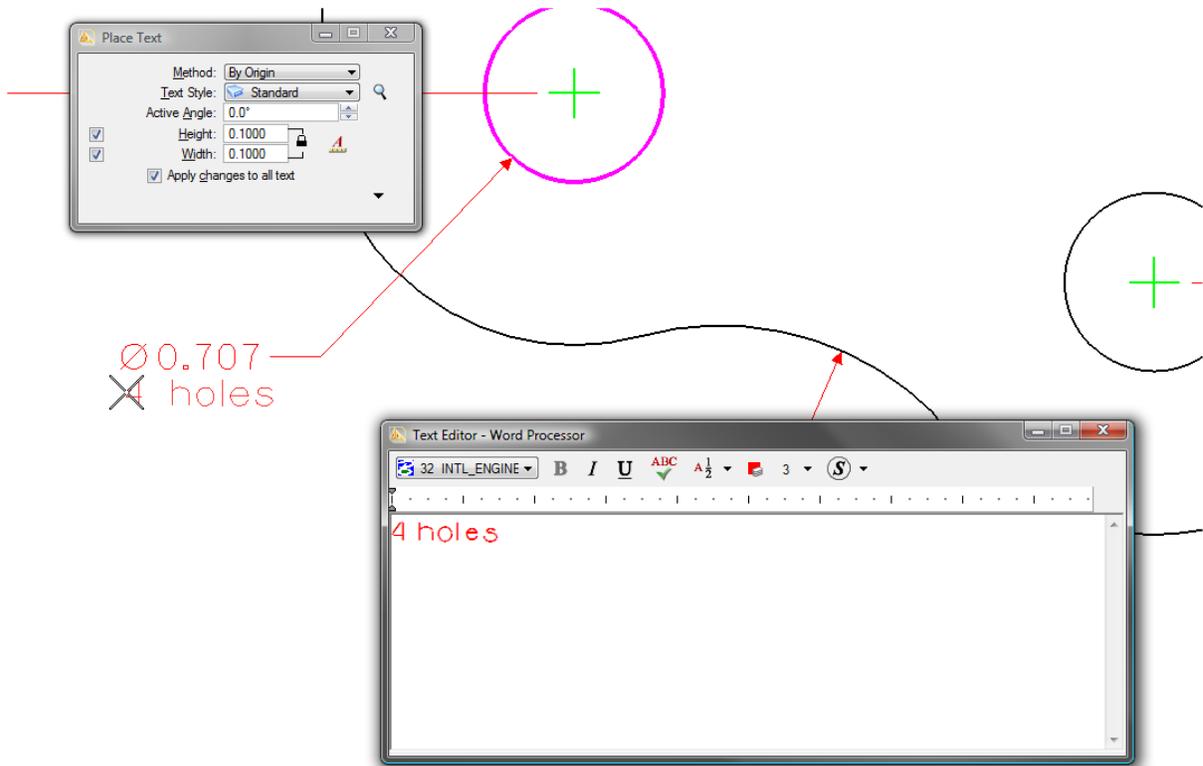


Figure 11.04 – Adding a Note to a Dimension

Select the Place Text tool from the Text toolbox. Type “4 holes,” and then place it below the 0.707 dimension. Next, switch to the Center level using the Level drop box and place a center mark on the 1.2” radius using the Center Mark tool, as shown in Figure 11.05.

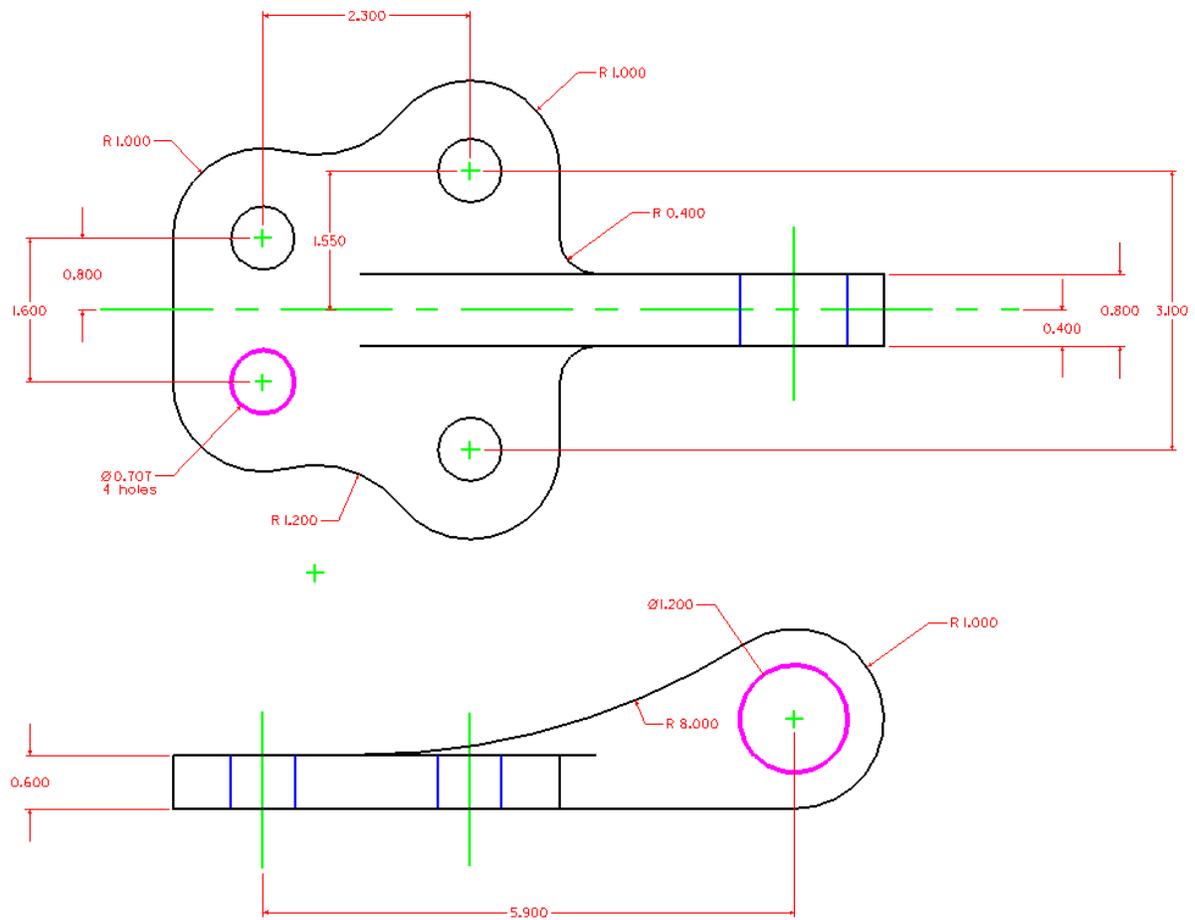


Figure 11.05 – Using the Diameter Dimension and Edit Text Tool

*** World Class CAD Challenge 02-22 * - Create a New, and draw the entities shown in Figure 11.05 in 10 minutes. Continue this drill four times, each time completing the drawing under 10 minutes to maintain your World Class ranking.**