Multiview Drawings

The agreed upon system for communicating design intent for the shape of parts is the multiview drawing. This consists of typically 3 views, a **Front**, **Top**, and **Side**. A simple part might only need 2 but a complex might need 6 views. The position of these views must show the three dimensions, length, height, and depth. Shown below is a draftsman obtaining what views are needed for a L-shaped bracket.

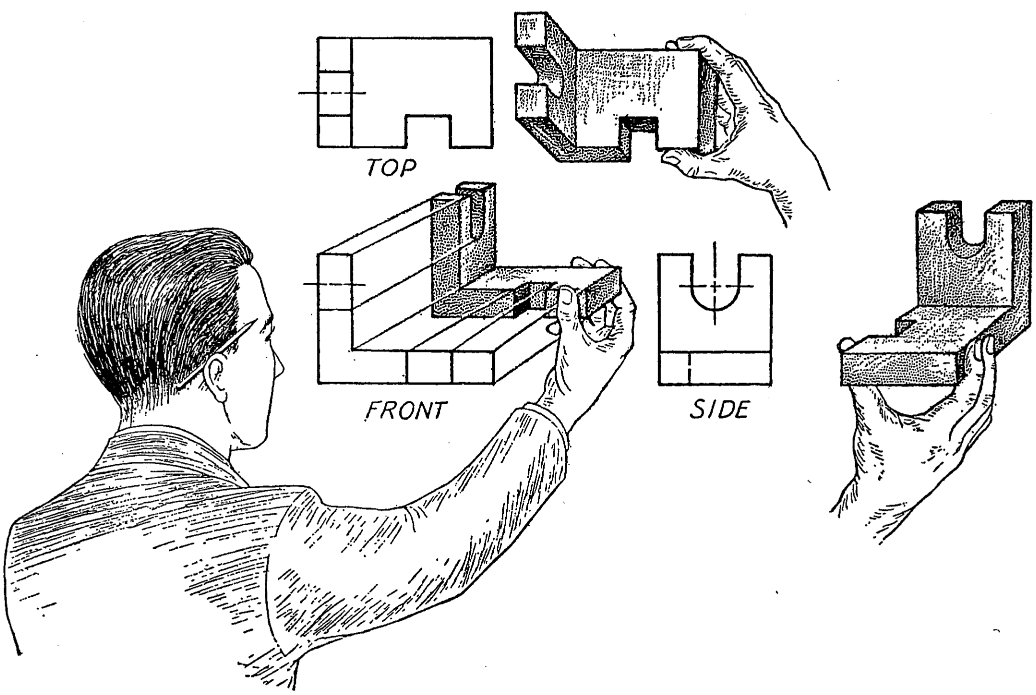
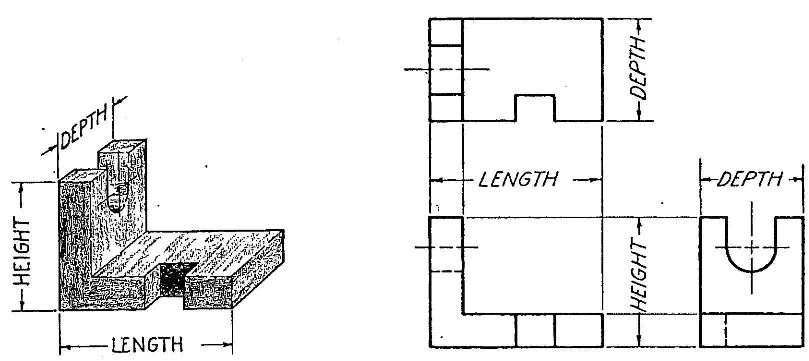
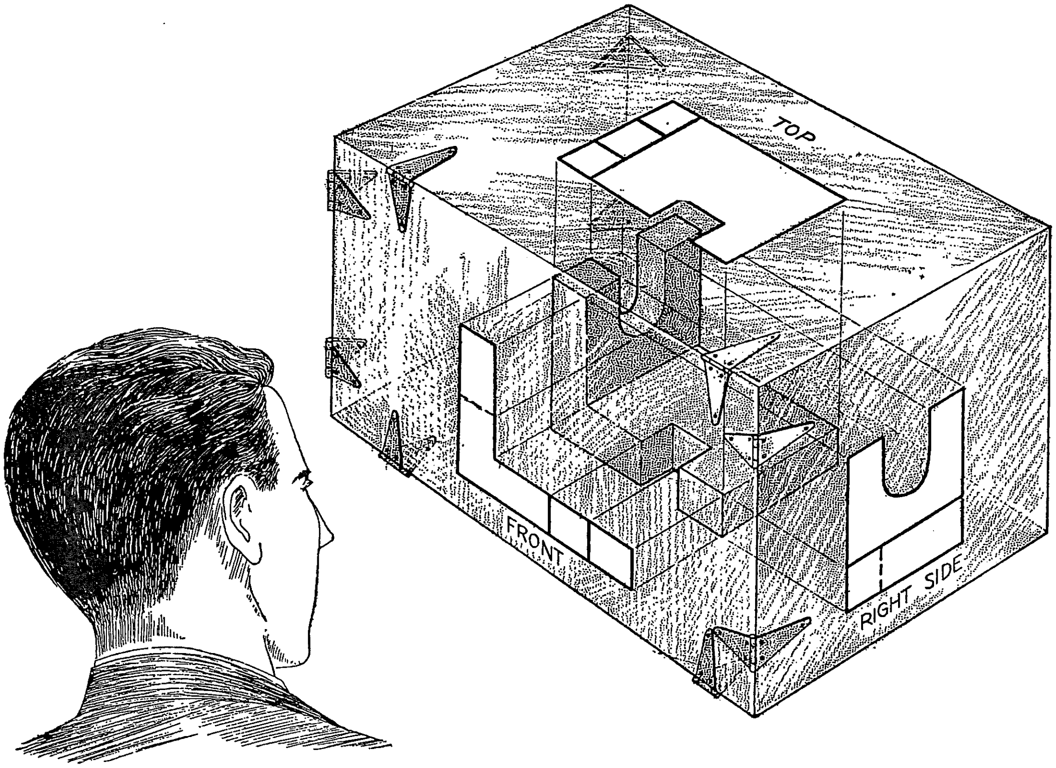


Fig. 6.3. Obtaining Three Views of an Object.

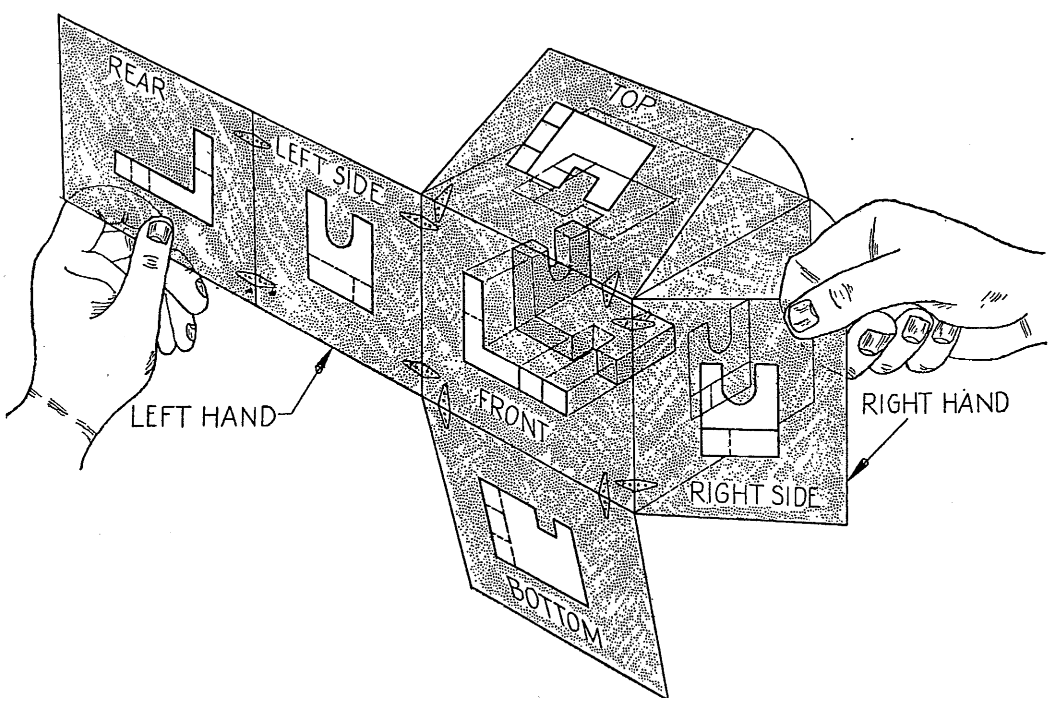


Ordinarily the view showing the **characteristic contour shape** of the part should be the **Front** (primary) **view** and if possible it should have the **smallest number of hidden lines**.

The **"Glass Box"** method is also used to explain the arrangement of orthographic views

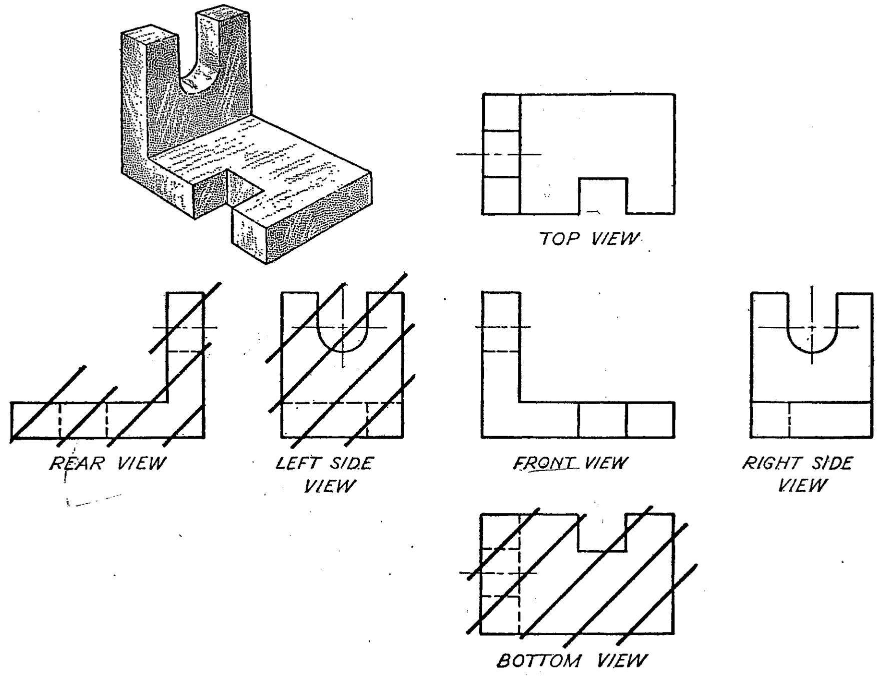


The Glass Box.



All things being equal, convention has it that there is a preference for the **Right-side view** over the left-side view and the **Top view** over the bottom view.

Since repetition of information only tends to confuse the reader avoid superfluous views.



Superfluous Views.

Examples of correct selection of views

Ordinarily, select the view showing the characteristic contour shape as the front view, regardless of the normal or natural front of the object.

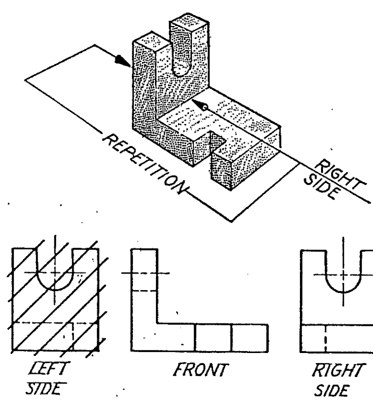


Fig. 6.16. The Preferred Side View.

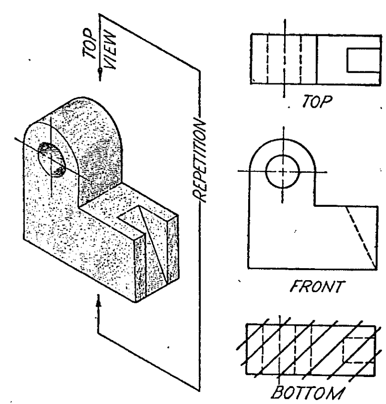


Fig. 6.17. The Preferred Choice of a Top View.

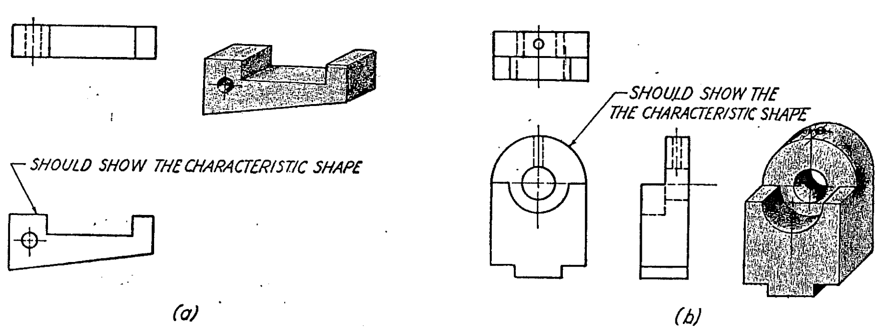


Fig. 6.18. The Principal View of an Object.

Examples of correct selection of views

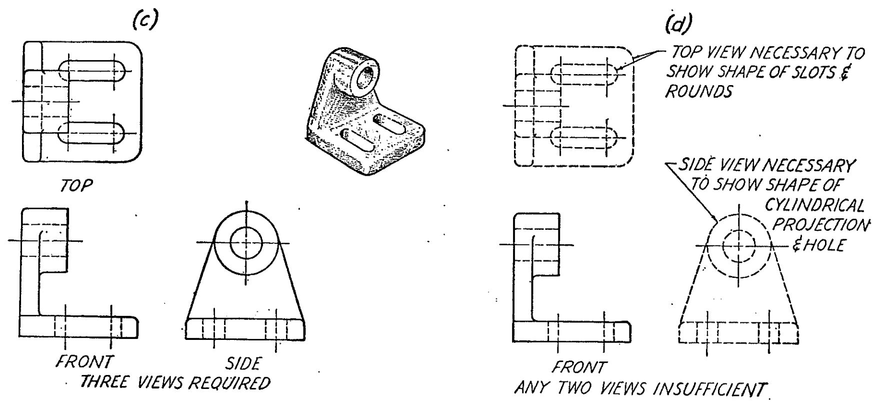


Fig. 6.14. Choice of Views.

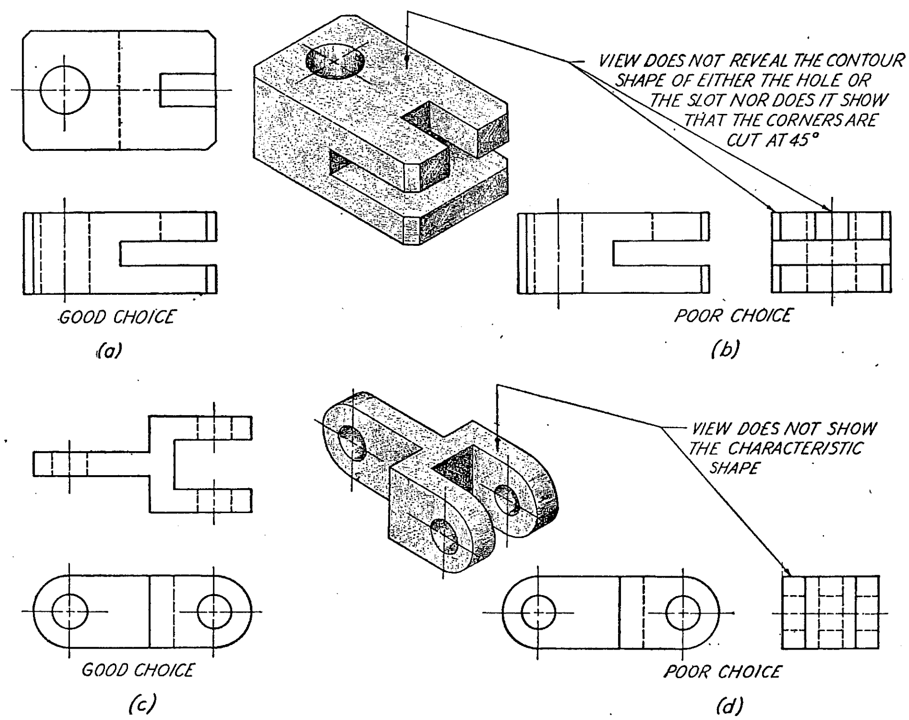


Fig. 6.13. Choice of Views.

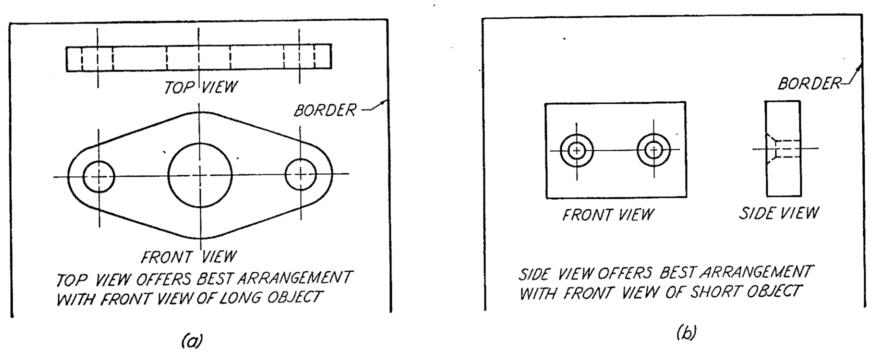


Fig. 6.15. Selection of Views.

Sectional Views

Whenever a representation becomes so confused that it is difficult to read, views "in section" are added. This "in Section" view is obtained by imagining the component to have been cut through by a plane and removing the front portion to reveal the interior features. The figure below illustrates this process.

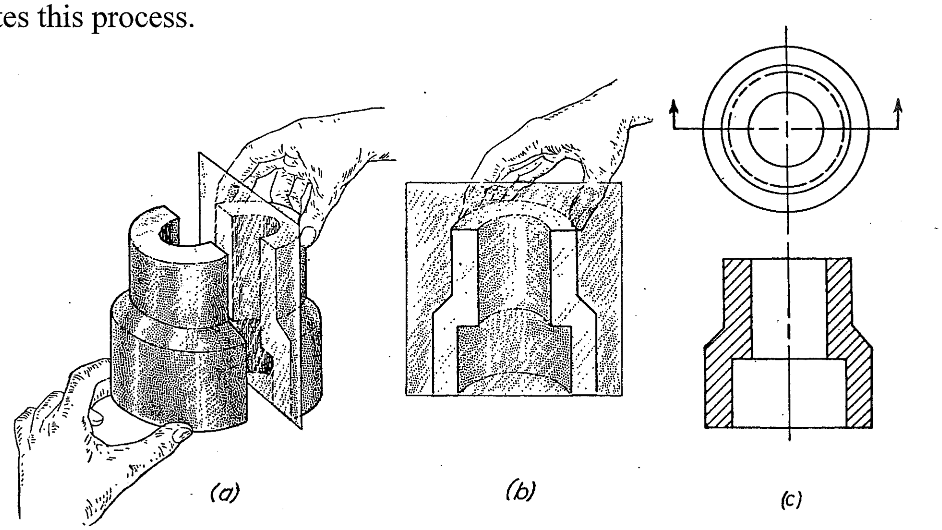


Fig. 9.3. The Theory of the Construction of a Sectional View.

The cutting plane need not be straight as shown below.

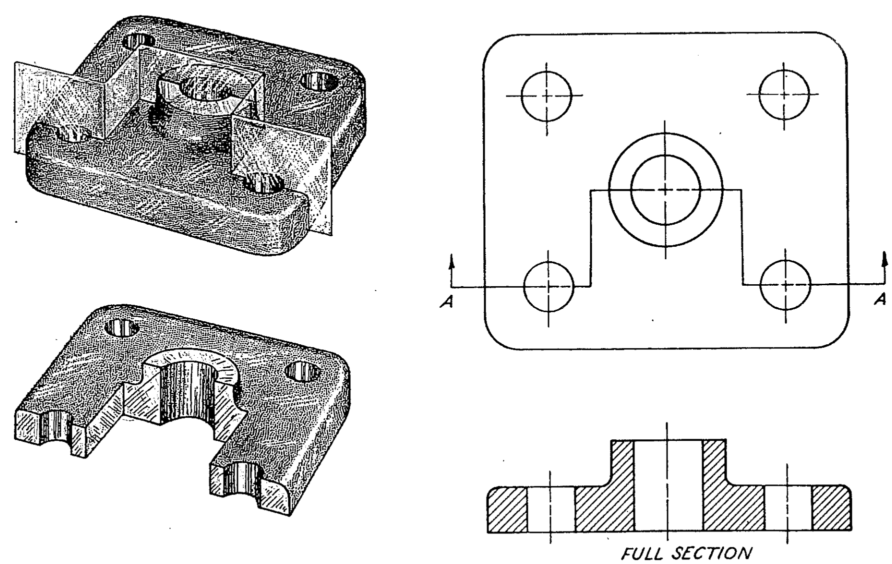


Fig. 9.4. An Offset Cutting Plane.

Examples of Section Views

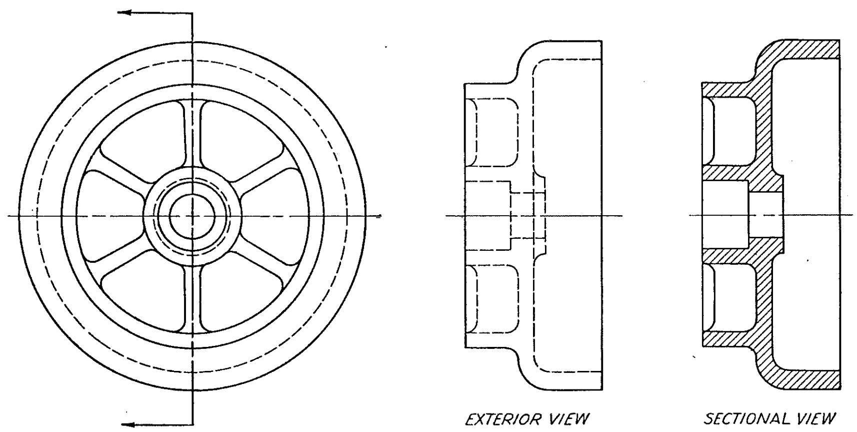


Fig. 9.2. A Sectional View.

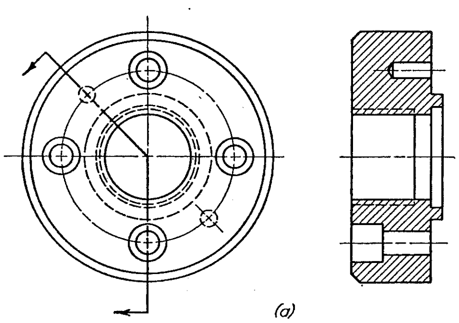
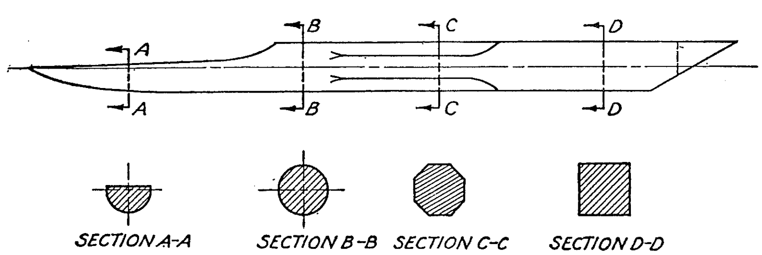


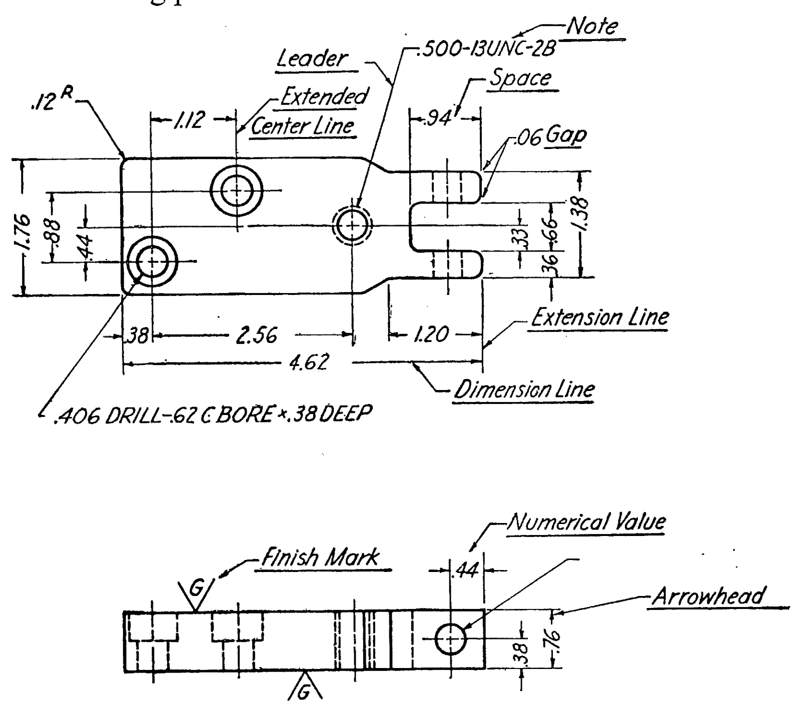
Fig. 9.22. Cutting Plane Lines



Types of lines and dimensioning

The following are line types we will use through out the semester, all but two can be found in the figure below (which two aren't there and where can they be found in this handout).

visible	hidden	centers	centerlines	extension
dimension	leader	cutting plane	section	



Terms and Dimensioning Notation.

Examples of dimensioning

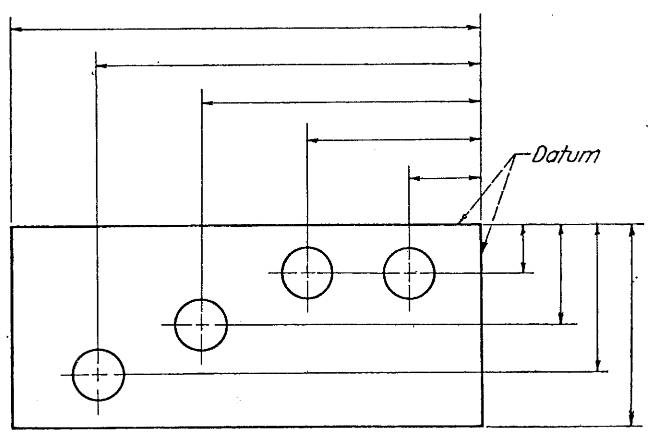
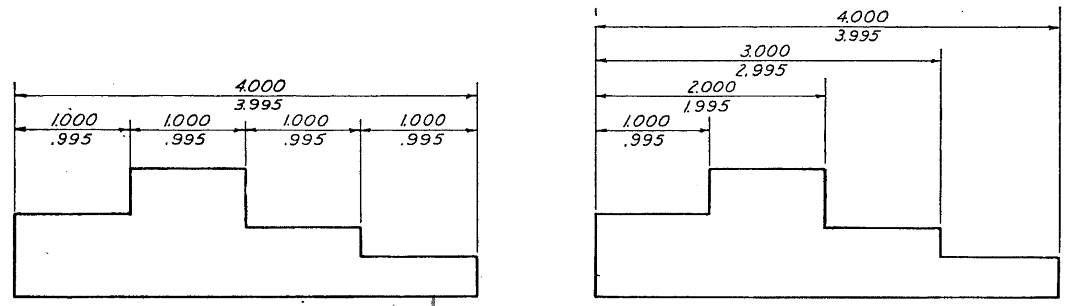


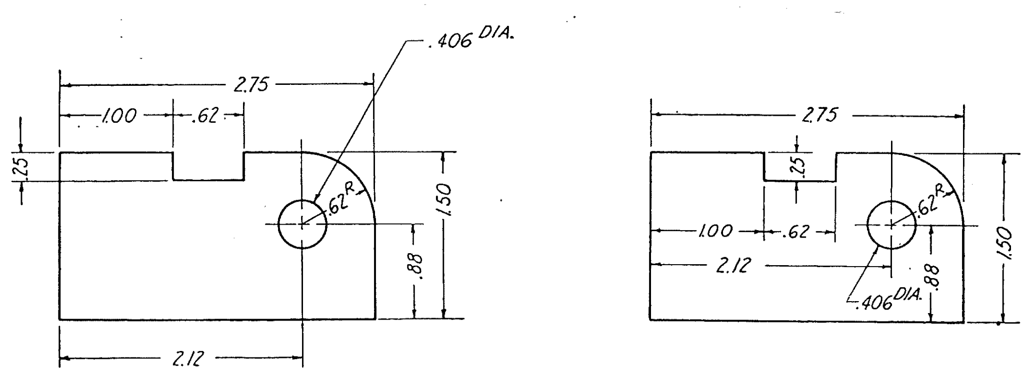
Fig. 15.61. Dimensions from Datum Lines.*



CUMULATIVE TOLERANCES (a) — bad practice expensive

NON-CUMULATIVE TOLERANCES (b) — good practice

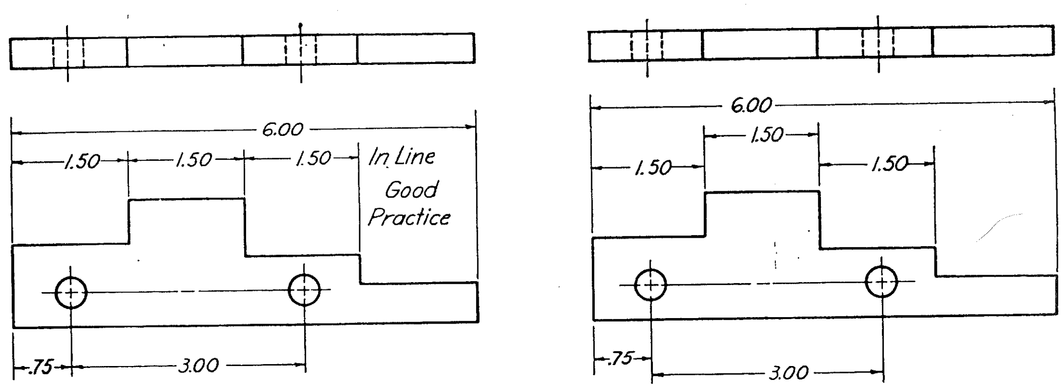
Fig. 15.68. Cumulative Tolerances.



GOOD PRACTICE (a)

POOR PRACTICE (b)

Fig. 15.18. Placing Dimensions.



CORRECT (a)

INCORRECT (b)

Fig. 15.24. Consecutive Dimensions.

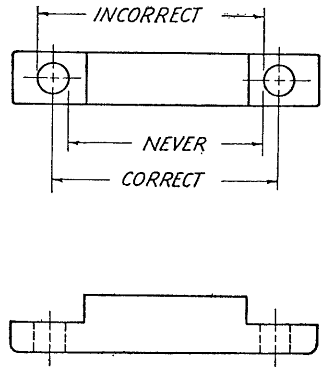


Fig. 15.22. Locating Holes.

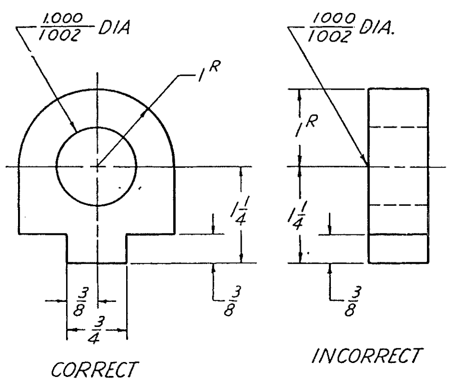


Fig. 15.23. Contour Principle of Dimensioning.

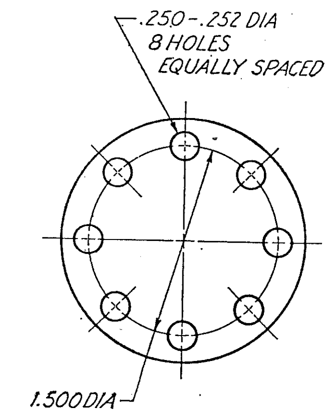


Fig. 15.44. Equally Spaced Holes.*

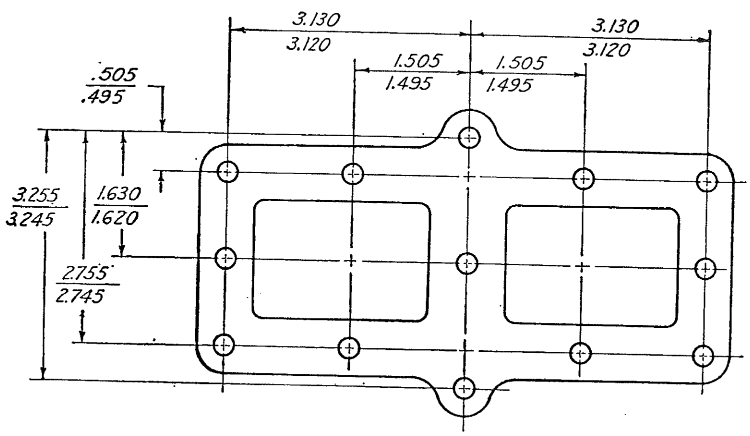


Fig. 15.47. Location Dimensioning of Holes.

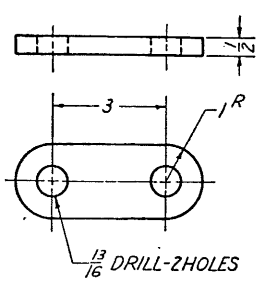


Fig. 15.50. Dimensioning a Piece with Rounded Ends.

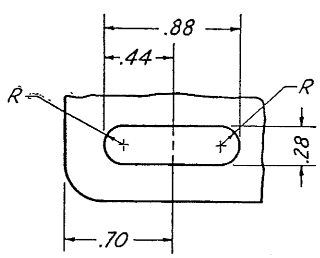


Fig. 15.51. Slot to Provide for Adjustment.

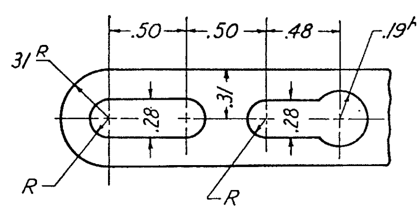


Fig. 15.52. Slots Performing a Mechanical Function.

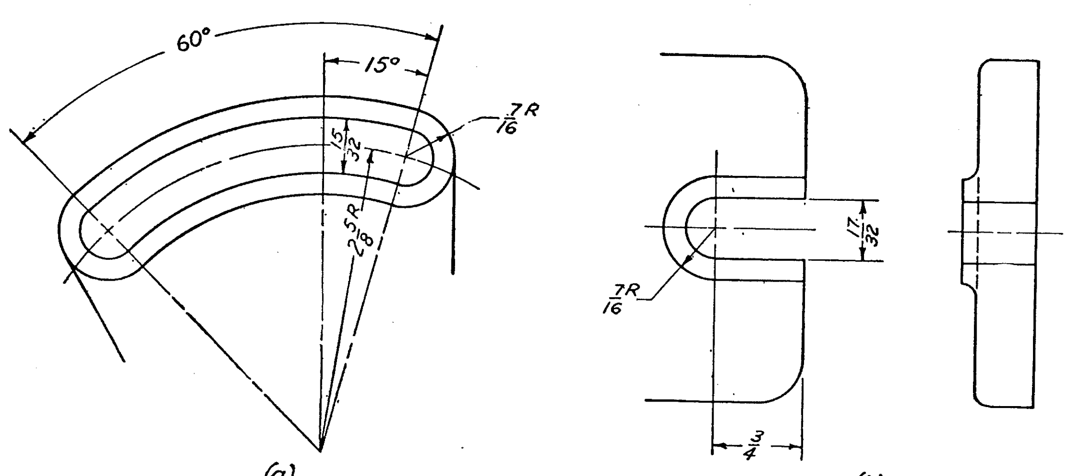


Fig. 15.53. Dimensioning Semicircular Features.