

NAME: ARIKPO DEBORAH KEDEAYEI

MATRIC NO: 18/ENG06/012

DEPARTMENT: MECHANICAL ENGINEERING

COURSE: ENG 232(ENGINEERING DRAWING)

ASSIGNMENT 1

THEORY

- 1.) A sectioned surface can be represented on a drawing by cross hatch shading drawn at 45° across the areas that are cut.

When sketching an object or part that requires a sectional view, they are drawn by eye at an angle of approximately 45° , and are spaced about $1/8$ apart. Since they are used to set off a section, they must be drawn with care. It is best to use the symbol for the material being shown as a section on a sketch.

- 2.) The various principles to be followed while dimensioning a drawing includes:

- The dimensions should be given on such view which illustrates the true shape and size of an object.
- As far as possible the dimensions should be given outside a view but can be given inside as well if unavoidable.
- All the dimensions are given in group form. Scattering of these is not correct.
- The dimensions should be intelligibly written.
- All the dimensions should be written parallel to the object line and the numbers should be written such that they could be read easily.
- The dimensions should not be repeated unless necessary.
- The unnecessary dimensions should be avoided.
- The extension and dimension lines should not intersect in any way.
- While giving dimension after completing a drawing, it should be kept in mind that no unit should be written with any number.
- The numbers should be clear, legible, and legible.
- The circle, arcs, and wholes should be compatible with their radius of diameter.
- If dimension are needed to be given in concentric circles, then try to make them on the front view and then write their dimensions.
- The leader line should be used for dimensions of the circles which should illustrate their diameters.
- Refrain from ambiguous and complicated dimensions.

- A dimension line should never coincide with an object line or centre line, nor should it be an extension of these lines.
- All dimensions should be given in decimal format.

3.) **HALF SECTION:** A half section is a view of an object showing one-half of the view in section. A half section exposes the interior of one half of an object while retaining the exterior of the other half. Half sections are used mainly for symmetric objects or assembly drawings. A centre line is used to separate the two halves. Hidden lines should not be shown on either half.

A half section is a scale drawing of a section through a symmetrical object that shows only half the object. The cutting-plane line cuts through the part and removes one quarter of the material.

FULL SECTION: A full section is when the imaginary cutting plane passes through the entire object, splitting the drawn object in two with the interior of the object revealed. In a full section, the cutting plane line passes through the part of the object. Normally a view is replaced with the full section view. The section-lined areas are those portions that have been in actual contact with the cutting-plane. A full section is the most widely used sectional view.

4.) Leader lines can be terminated by the use of **ARROWHEADS, DOTS**. One end of the leader terminates either in an arrowhead or dot. The arrowhead touches the outline, while the dot is placed within the outline of the object.

The arrow terminator is used to point to an edge of an item. The dot is used to point to a face. The other end of the leader is terminated in a horizontal line at the bottom level of the first or the last letter of the note.

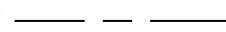
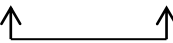
5.) **SCALE= 5:1**

This means a 50mm line is to be drawn at a scale of 5:1 (that is 5 times more than its original size).

SCALE=1:10

This means that the object is 10 times smaller than in real life.

6.) The shape identification symbols for the following are:

- **DIAMETER= \varnothing**
- **RADIUS= R**
- **SQUARE= \square**
- **SPHERICAL RADIUS= SR**
- **CENTRE LINE= CL or **
Centre lines are drawn to indicate the exact centre of a component being drawn. They are made from a series of lighter, long and short dashes.
- **CUTTING PLANE LINE= **

Cutting plane lines are thick lines that run through the center of the object that the interior wants to provide and interior view of. Two perpendicular lines with arrows showing in which direction the interior of the object should be viewed are drawn at the end of the line.

- **LONG BREAK**= 

Long break lines are ruled lines with free hand zigzags that reduce the size of the drawing required to delineate an object and reduce detail.

7.) The elements to be considered while obtaining a projection are:

- Dimensions which are parallel to the direction of viewing will not be seen.
- Edges which are parallel to the direction of viewing are seen as points. Surfaces which are parallel to it are seen as lines.
- The visible edges and the intersection of the surfaces are shown by object lines. But the hidden edges are shown by dotted lines.
- The centre lines of the symmetrical parts like whole cylinder etc. should be clearly shown.

b.) **ORTHOGRAPHIC PROJECTION:** An orthographic projection is a way of representing a three-dimensional object in two dimensions. It is a method of representing the exact shape of an object by dropping perpendiculars from two or more sides of the object to planes, generally at right angles to each other; collectively, the views on these planes describe the object completely.

8.) A projection of an object is called an orthographic projection when a front, side and plan view are drawn so that a person looking at the drawing can see all the important sides.

It is called an orthographic projection when it has three two-dimensional drawings in each of which the object is viewed along parallel lines that are perpendicular to the plane of the drawing.

9.) **FIRST ANGLE PROJECTION:** To get the first angle projection, the object is placed in the first quadrant meaning it is placed between the plane of projection and the observer.

THIRD ANGLE PROJECTION: For the third angle projection, the object is placed below and behind the viewing planes meaning the plane of projection is between the observer and the object.

OBJECTIVES

- 1.) Reference plane (a)
- 2.) False (b)
- 3.) Directly (c)
- 4.) 120° (b)

- 5.) 60° (a)
- 6.) Rivet (b)
- 7.) Crowning (c)
- 8.) 45° (b)
- 9.) Circle (a)
- 10.) An ellipse (a)
- 11.) Cylinder (c)
- 12.) Cone (a)
- 13.) Pivot bearing (c)
- 14.) 55° (c)
- 15.) Horizontal plane (d)

