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18/ENG03/006

Civil Engineering **1.**

SECTIONAL VIEW

The view obtained by cutting an object with an imaginary cutting plane is called Sectional View.

The surface produced by cutting the object by the section plane is called Section. It is indicated by thin section lines uniformly spaced, generally at an angle of 45'. As already imagined, a sectional view is a view seen when a portion of the object nearest to the observer is imagined to be removed by means of a cutting plane or planes, thus revealing the interior construction. The other views are not affected in any way always represent the entire object.

Types Of Sectional Views

The sectional views are of mainly two types. These are dependent upon the number of cutting planes cutting the object.

- **Full Sectional View**
- **Half Sectional View.**

Full Sectional View

The view obtained after removing the front half portion of an object is called a Full Sectional Views or Front Sectional Views or Simply Sectional Elevation.

When the cutting plane cuts the object lengthwise, full sectional front view is obtained. It is also called longitudinal section. It may be noted that the top view or the slide remain unaffected, that means top view is drawn full not half.

Half Sections

The view obtained after removing the front quarter i.e. one fourth portion of an object by means of two cutting planes at right angle to each other is called Half Sectional View or Half Sectional Elevation.

It may be observed that the plane or top view also remain unaffected i.e. full side view is drawn

2.

PRINCIPLES OF DIMENSIONING :

After completing a drawing, it is necessary that its measurements and notes should be written in such a way that they can be read easily.

Follow are the Principles that have been devised for this purpose.

1. The dimensions should be given on such view which illustrates the true shape and size of an object.

2. As far as possible the dimensions should be given outside a view but can be given inside as well if unavoidable.

3. All the dimensions are given in group form. Scattering of these is not correct.

4. The dimensions should be intelligibly written.

5. All the dimensions should be written parallel to the object line and the numbers should be written such that they could be read easily.

6. The dimensions should not be repeated unless necessary.

7. The unnecessary dimensions should be avoided.

8. The extension and dimension lines should not intersect in any case.

9. While giving dimension after completing a drawing, it should be kept in mind that no unit should be written with any number.
10. The numbers should be clear, legible, and intelligible.

11. The circle, arcs, and wholes should be compatible with their radius of diameter.

12. If dimensions are needed to be given in concentric circles, then try to make them on the front view and then write their dimensions.

13. The Leader Line should be used for writing dimensions of the circles which should illustrate their diameters.

14. Refrain from ambiguous and complicated dimensions.

3.

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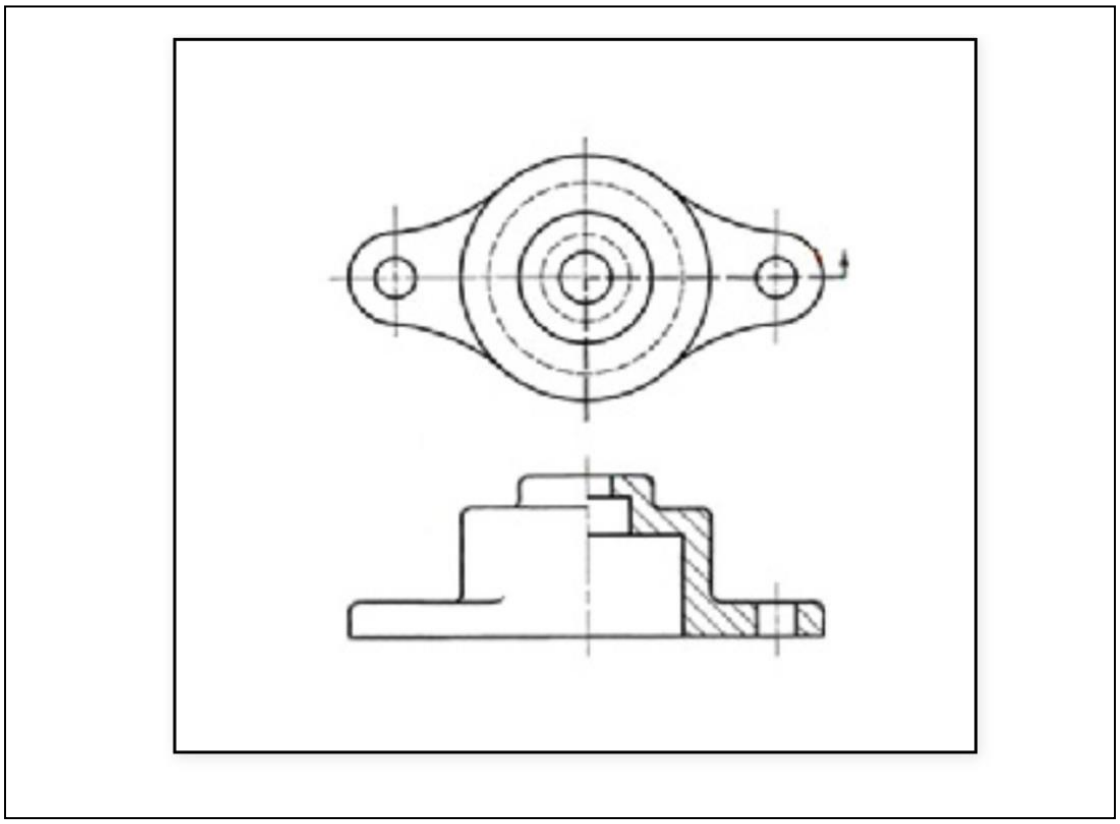

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4.

Leader lines are used to direct an expression, in note form, to the intended place on the drawing.

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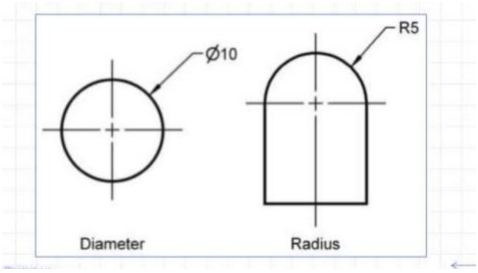
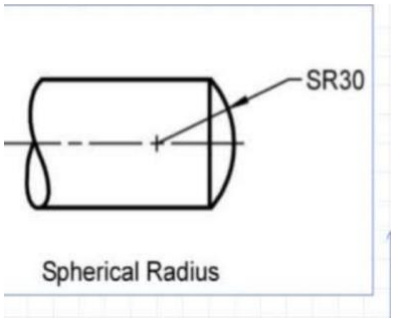
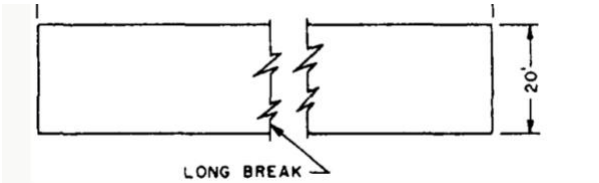
- Scale=5:1: the size of the measurement is 5times more than its original size. For example a 50mm line is to be drawn at a scale of 5:1-the measurement 50mm is multiplied by 5 to give 250mm. a 250mm line is drawn
- Scale=1:10: the size of the measurement is 10times less than the original size.

6.



SQUARE





centre line

cutting plane line

7. There are a number of techniques of projection that can be used to represent three-dimensional objects in two-dimensions by 'projecting' their image onto a planar surface.

Drawing projections should comply with relevant standards (such as British Standards) to prevent misunderstanding and avoid errors in interpreting the drawing.

ORTHOGRAPHIC PROJECTIONS are tools that allow us to represent three-dimensional objects with two-dimensional drawings. Orthographic projection is a type of 'parallel' projection in which the four orthogonal views of an object are shown. The orthographic projection commonly used in the UK is called first angle projection.

8.

Orthographic projection (sometimes referred to as orthogonal projection, used to be called analemma[a]) is a means of representing three-dimensional objects in two dimensions. It is a form of parallel projection, in which all the projection lines are orthogonal to the projection plane

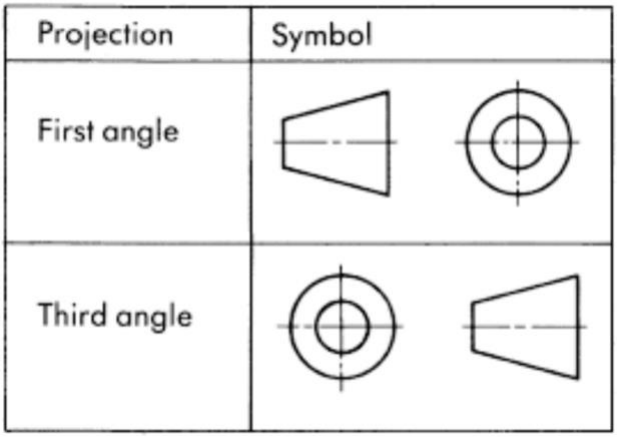
9

First Angle Projection

This is one of the most common methods used to obtain engineering drawings, mostly for orthographic projections. Orthographic projection is a graphical method used to represent three-dimensional structures or objects into different perspective projection images called views. The orthographic view typically consists of the top view, front view, and the side view.

Third Angle Projection:

This is another perspective projection method used to represent three-dimensional objects using a series of two-dimensional views. In third angle projection, the 3D object to be projected is placed in the third quadrant and is positioned behind the vertical plane and below the horizontal plane. Unlike in first angle projection where the plane of projection is supposedly opaque, the planes are transparent in third angle projection. This projection method is mainly used in the United States and Japan stipulates the use of third angle projection schema for industrial designs for product fabrication.



OBJECTIVES

1. (A) reference plane
2. (B) false
3. (C) Directly
4. (B) 120
5. (A) 60
6. (B) Rivet
7. (C) Crowning
8. (B) 45
9. (A) A circle
10. (A) an Ellipse
11. (C) Cylinder
12. (A) cone
13. (A) Journal bearing
14. (C) 55 degrees
15. (D) Horizontal