Various Types of Lines

- Various types of lines used in general engineering drawing are described below:
  - **Outlines:** Lines drawn to represent visible edges and surface boundaries of objects are called outlines or principal lines. They are continuous thick lines.
  - **Margin lines:** They are continuous thick lines along which the prints are trimmed.
  - **Dimension lines:** These lines are continuous thin lines. They are terminated at the outer ends by pointed arrowheads touching the outlines, extension lines or center lines
  - **Projection lines:** These lines are also continuous thin lines. They extended by about 3 mm beyond the dimension lines
  - **Construction lines:** These lines are drawn for constructing figures. They are shown in geometrical drawings only. They are continuous thin light lines.

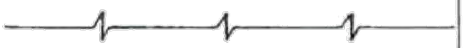
Contd……..

- **Construction lines:** These lines are drawn for constructing figures. They are shown in geometrical drawings only. They are continuous thin light lines.
- **Section lines:** These lines are drawn to make the section evident. They are continuous thin lines and are drawn generally at an angle of 45 degree to the main outline of the section. They are uniform spaced about 1 mm to 2 mm apart.
- **Leader or Pointer lines:** Leader line is drawn to connect a note with the feature to which it applies. It is a continuous thin lines.
- **Border lines:** Perfectly rectangular working space is determined by drawing the border lines. They are continuous thin lines.
- **Short-break lines:** These lines are continuous, thin and wavy. They are drawn freehand and are used to show a short break or irregular boundaries.

Contd……

- **Long-break lines:** These lines are thin ruled lines with short zigzags within them. They are drawn to show long breaks.
- **Hidden or Dotted lines:** Interior or hidden edges and surfaces are shown by hidden lines. They are also called dashed line or dotted lines. They are of medium thickness and made up of short dashes of approximately equal length of about 2 mm spaced at equal distances of about 1 mm.
- **Center lines:** Center lines are drawn to indicate the axes of cylindrical, conical or spherical objects or details, and also to show the centers of circle or arcs. They are thin, long, chain lines composed of alternately long and short dashes spaced approximately 1 mm apart.
- **Cutting-plane lines:** The location of a cutting plane is shown by this line. It is long, thin, chain line, thick at ends only.
- **Chain Thick:** These lines are used to indicate spatial treatment on the surface.

Various Types of Lines

Line	Description	General applications
A 	Continuous thick	Visible outlines Visible outlines
B 	Continuous thin (straight or curved)	Imaginary lines of intersection Dimension lines Projection lines Leader lines Hatching Outlines of revolved sections in place Short centre lines
C 	Continuous thin freehand	Limits of partial or interrupted views and sections, if the limit is not a chain thin line
D 	Continuous thin (straight) with zigzags	Long-break line
E 	Dashed thick	Hidden outlines Hidden edges
F 	Dashed thin	Hidden outlines Hidden edges
G 	Chain thin	Centre line Lines of symmetry Trajectories
H 	Chain thin, thick at ends and changes of direction	Cutting planes
J 	Chain thick	Indication of lines or surfaces to which a special requirement applies
K 	Chain thin double-dashed	Outlines of adjacent parts Alternative and extreme positions of movable parts Centroidal lines Initial outlines prior to forming Parts situated in front of the cutting plane

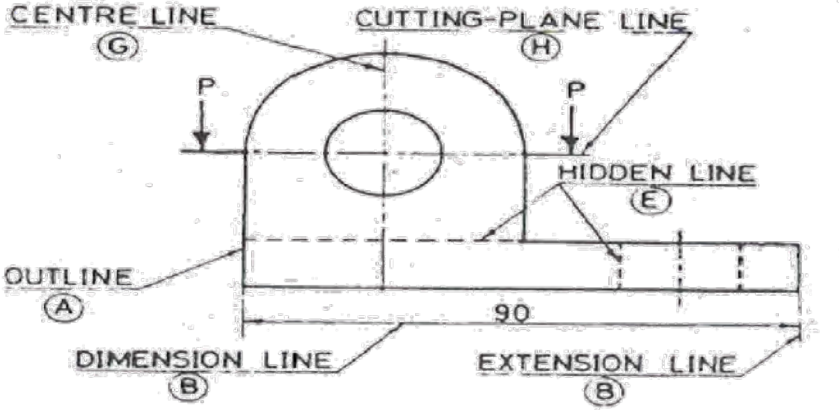
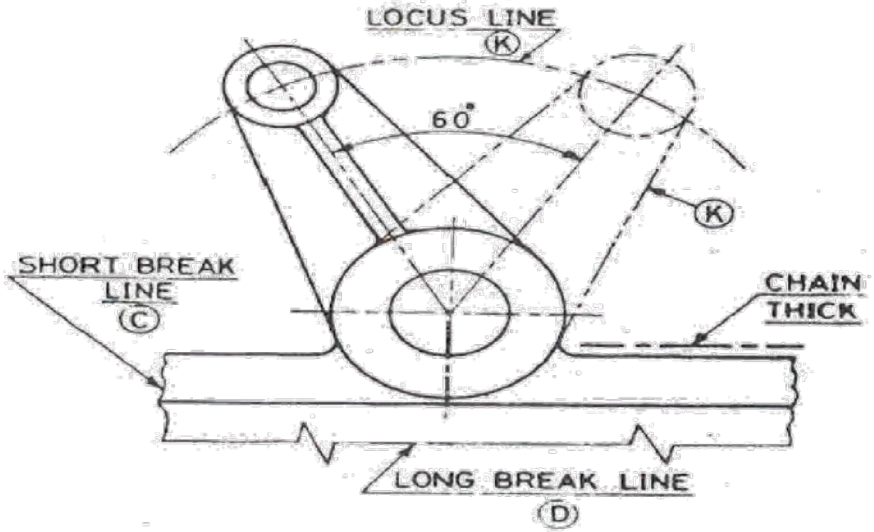

CENTRE LINE
G
CUTTING-PLANE LINE
H
P
P
HIDDEN LINE
E
OUTLINE
A
90
DIMENSION LINE
B
EXTENSION LINE
B
SECTION LINE
D
LEADER LINE
B
ø10

FIG. 3-2


LOCUS LINE
K
60°
K
SHORT BREAK LINE
C
CHAIN THICK
LONG BREAK LINE
D

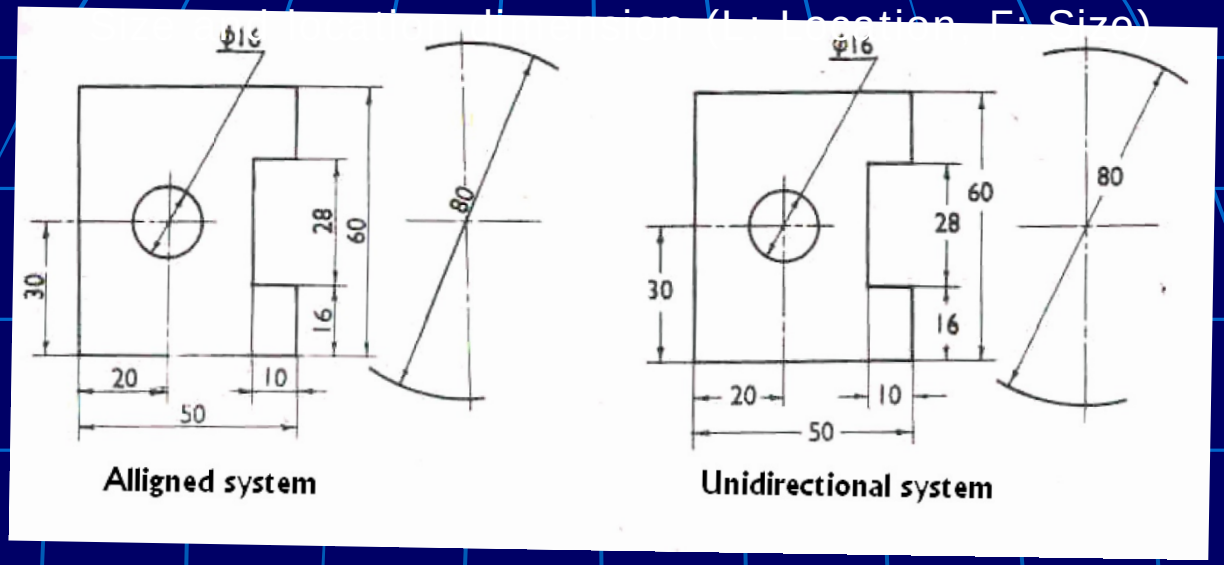
Dimensioning

- Every drawing, whether a scale drawing or freehand drawing, besides showing the true shape of an object, must supply its exact length, breath, height, size and position of holes and grooves etc. supplying these information on a drawing is called dimensioning.

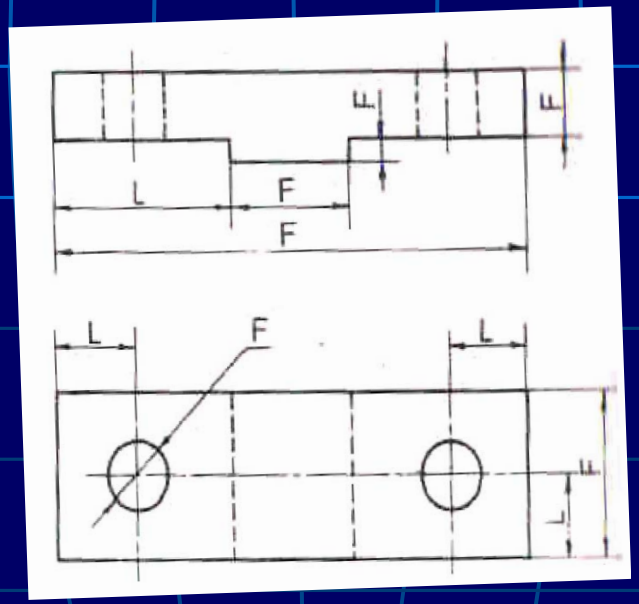
- There are two system of placing dimensions

  - **Aligned System:** In this system the dimensions are placed perpendicular to the dimension line in such a way that it may be read from the bottom edge or the right hand edge of the drawing sheet. The dimensions should placed near the middle and above, but clear of the dimension lines.

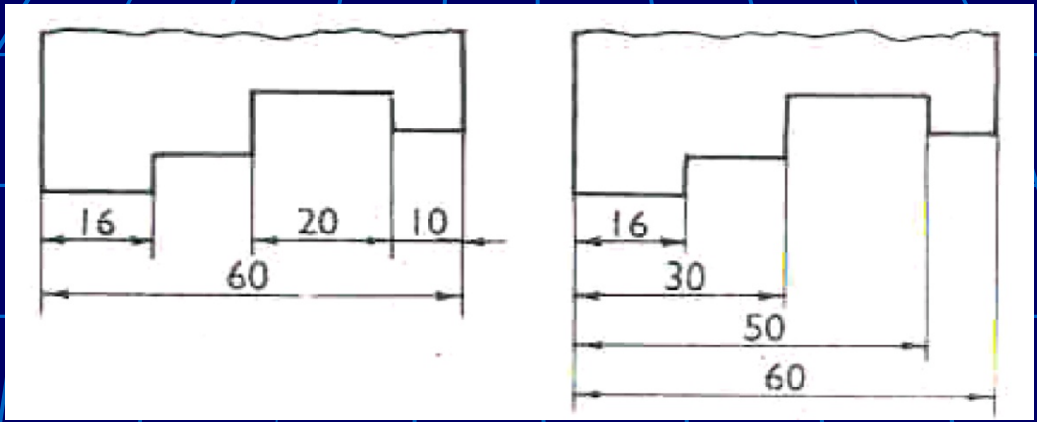
  - **Unidirectional System:** In unidirectional system all dimensions are so placed that they can be read from the bottom edge of the drawing sheet. The dimension lines are broken near the middle for inserting the dimensions. This system is mainly used on large drawings- as of aircrafts, automobiles etc. where it is inconvenient to read dimensions from right hand side.



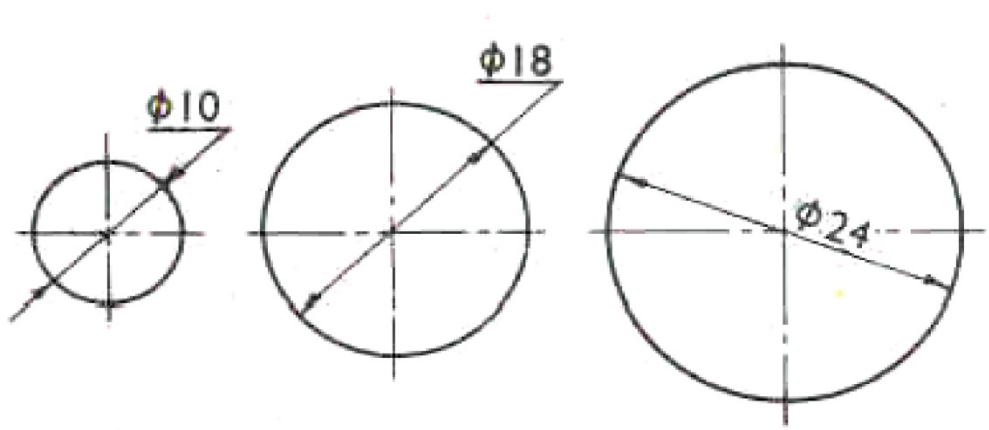
Systems of placing Dimensions



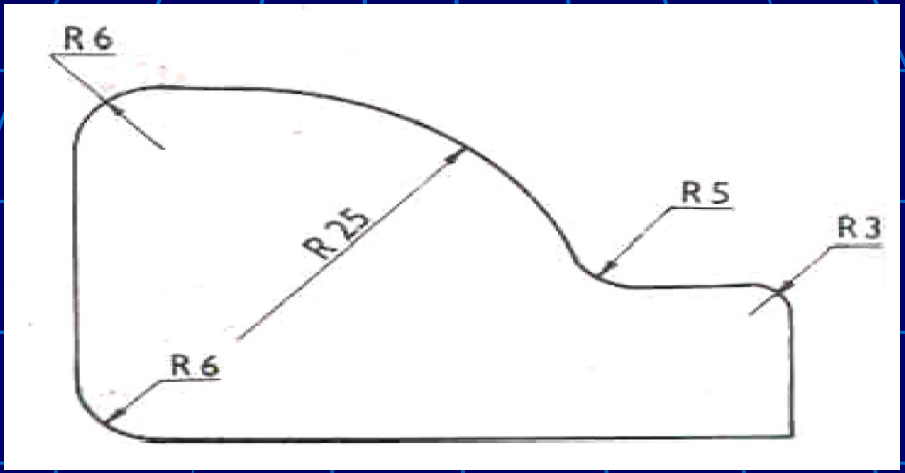
Size and Location Dimension, L: Location, F: Size



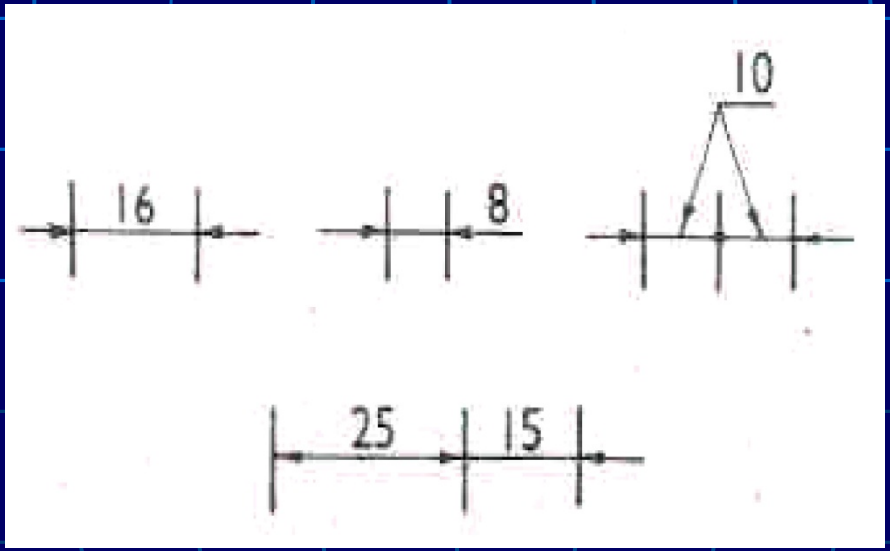
Chain and Parallel Dimensions



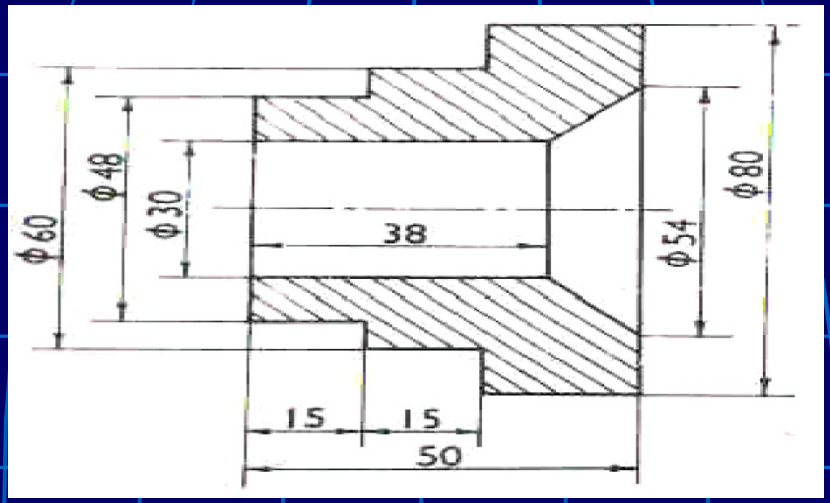
Dimensions of Circular Feature



Dimensioning of arcs



Dimensioning in narrow spaces



Place smaller dimensions inside