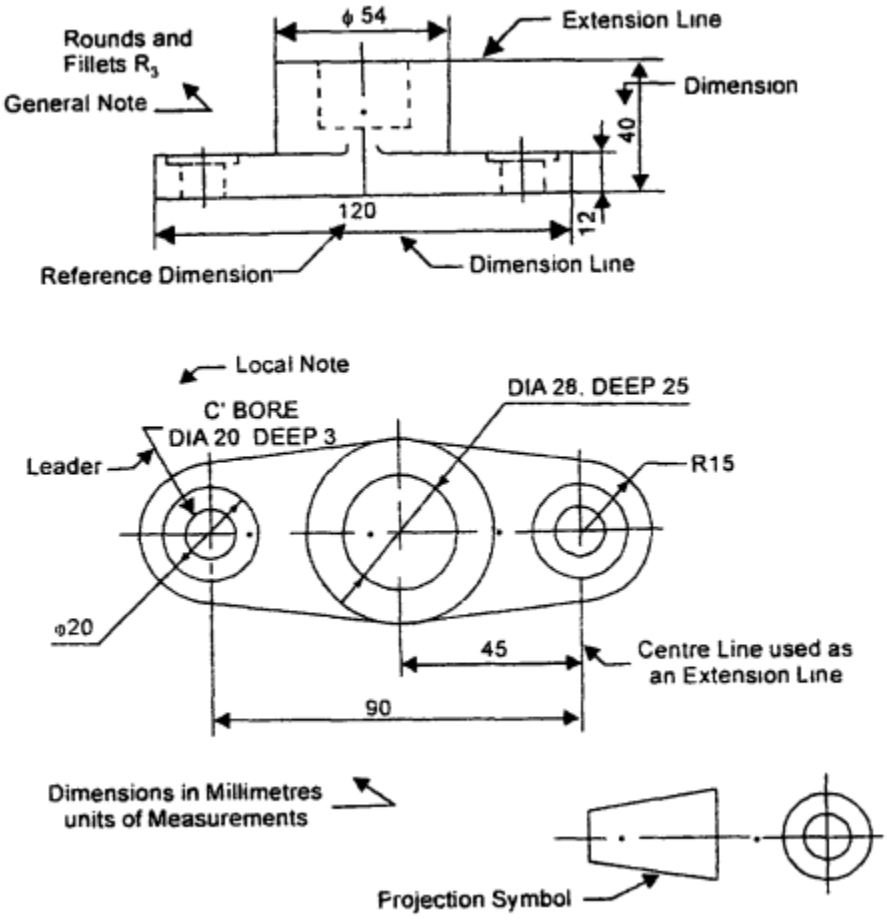
Dimensioning

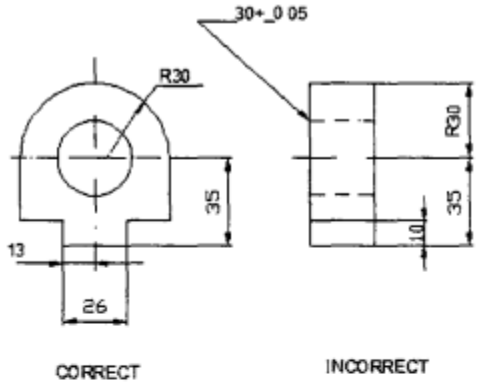
Drawing of a component, in addition to providing complete shape description, must also furnish information regarding the size description. These are provided through the distances between the surfaces, location of holes, nature of surface finish, type of material, etc. The expression of these features on a drawing, using lines, symbols, figures and notes is called dimensioning.



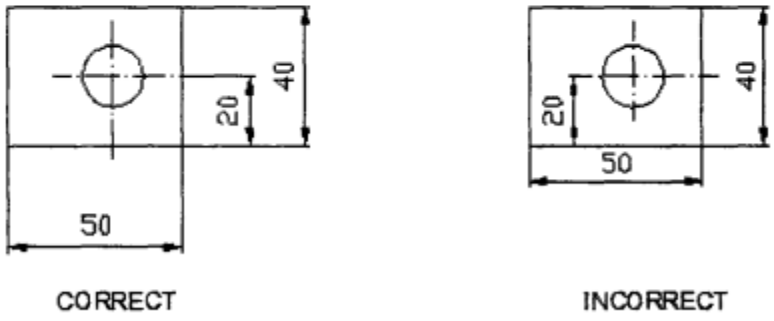
2.4.1 Principles of Dimensioning

Some of the basic principles of dimensioning are given below.

1. All dimensional information necessary to describe a component clearly and completely shall be written directly on a drawing.
2. Each feature shall be dimensioned once only on a drawing, i.e., dimension marked in one view need not be repeated in another view.
3. Dimension should be placed on the view where the shape is best seen
4. As far as possible, dimensions should be expressed in one unit only preferably in millimeters, without showing the unit symbol (mm).
5. As far as possible dimensions should be placed outside the view
6. Dimensions should be taken from visible outlines rather than from hidden lines

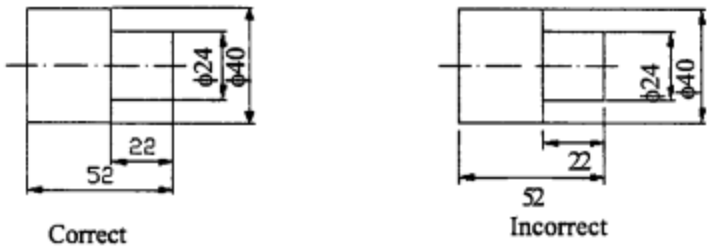


Placing the Dimensions where the Shape is Best Shown

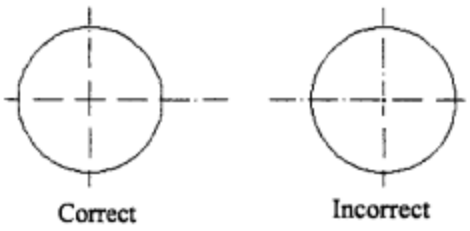


Placing Dimensions Outside the View

7. No gap should be left between the feature and the start of the extension line
8. Crossing of centre lines should be done by a long dash and not a short dash



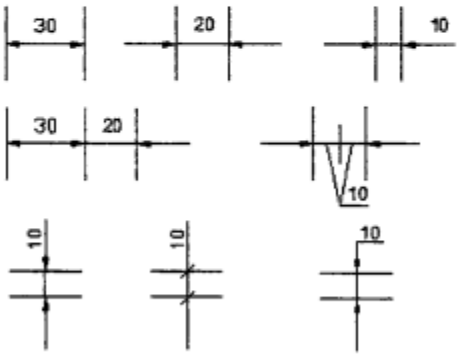
Marking of Extension Lines



Crossing of Centre Lines

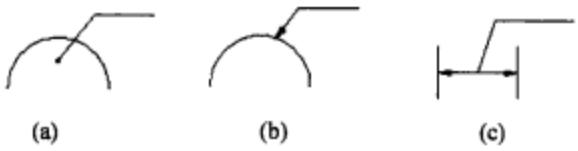
2.4.2 Execution of Dimensions

1. Prejection and dimension lines should be drawn as thin continuous lines. projection lines should extend slightly beyond the respective dimension line. Projection lines should be drawn perpendicular to the feature being dimensioned. If the space for dimensioning is insufficient, the arrow heads may be reversed and the adjacent arrow heads may be replaced by a dot (Fig.2.19). However, they may be drawn obliquely, but parallel to each other in special cases, such as on tapered feature (Fig.2.20).



Dimensioning in Narrow Spaces

2. A leader line is a line referring to a feature (object, outline, dimension). Leader lines should be inclined to the horizontal at an angle greater than 30°. Leader line should terminate,
   (a) with a dot, if they end within the outline of an object a).
   (b) with an arrow head, if they end on outside of the object b).
   (c) without a dot or arrow head, if they end on dimension line c).



Termination of leader lines

Dimension Termination and Origin Indication

Dimension lines should show distinct termination in the form of arrow heads or oblique strokes or where applicable an origin indication (. The arrow head included angle is 15°. The origin indication is drawn as a small open circle of approximately 3 mm in diameter. The proportion lenght to depth 3 : 1 of arrow head is shown in .

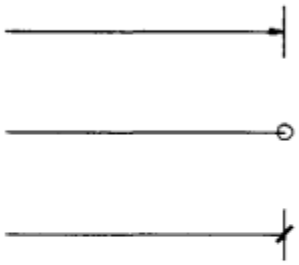
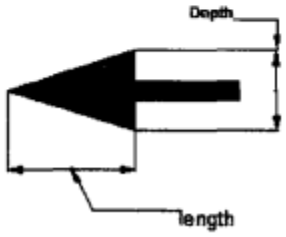
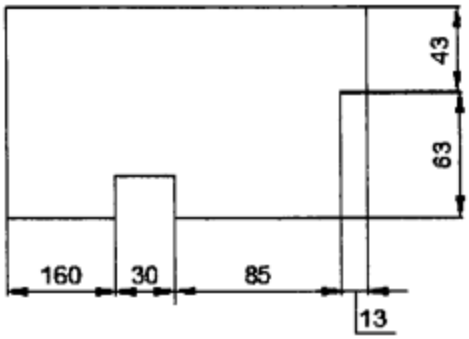


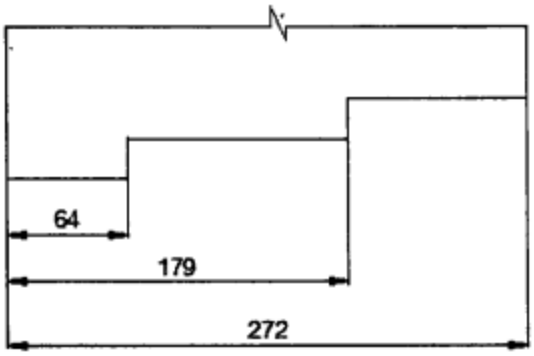
Fig. 2.22 Termination of Dimension Line



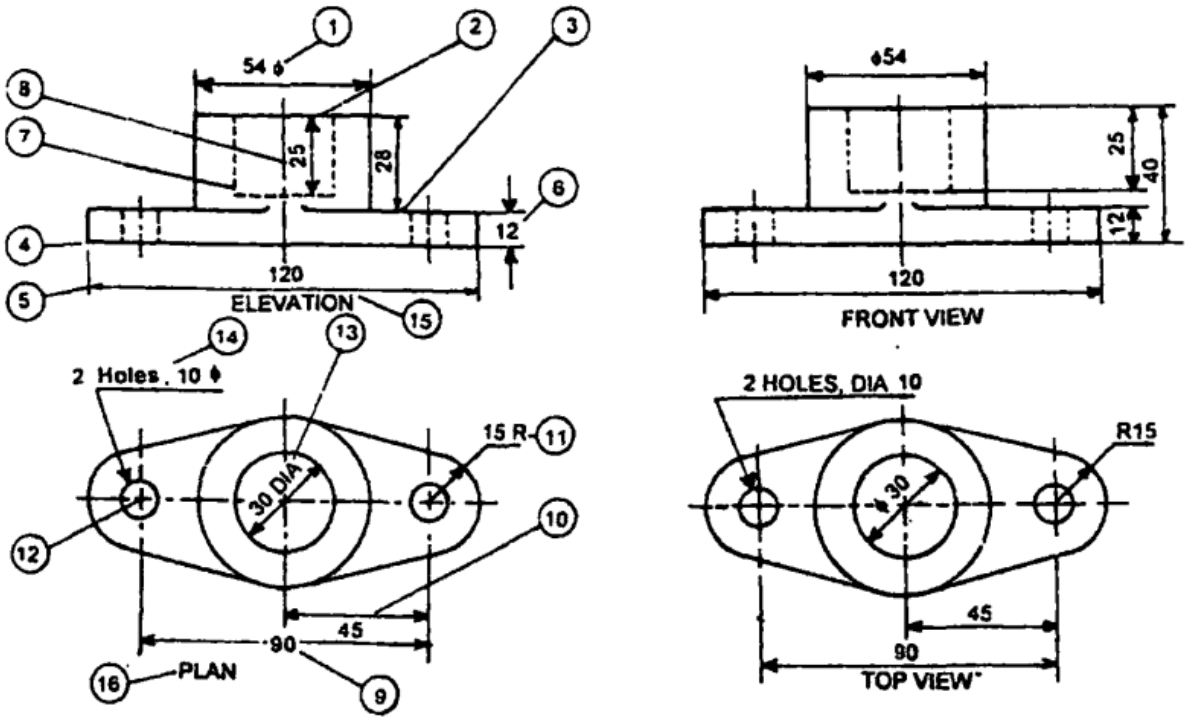
Proportions of an Arrow Head



Chain Dimensioning



Parallel Dimensioning



(a) (b)

1. Dimension should follow the shape symbol.
2. and 3. As far as possible, features should not be used as extension lines for dimensioning.
4. Extension line should touch the feature.
5. Extension line should project beyond the dimension line.
6. Writing the dimension is not as per aligned method.
7. Hidden lines should meet without a gap.
8. Centre line representation is wrong. Dots should be replaced by small dashes.
9. Horizontal dimension line should not be broken to insert the value of dimension in both aligned and uni-direction methods.
10. Dimension should be placed above the dimension line.
11. Radius symbol should precede the dimension.
12. Centre line should cross with long dashes not short dashes.
13. Dimension should be written by symbol followed by its values and not abbreviation.
14. Note with dimensions should be written in capitals.
15. Elevation is not correct usage.