Lettering

Objectives: At the end of this lesson you shall be able to
- **state the lettering style**
- **designate the letters and numerals as per IS:962-1989.**

Introduction

1 An engineering drawing not only shows the shape of an object but also describes the size and other specifications necessary for its construction in the form of dimensions and notes.

2 Writing of titles, sub-titles, dimensions, scale and style, if it is in poor lettering, will spoil the appearance of an otherwise acceptable drawing.

3 'Practice makes a man perfect', Practice accompanied by continuous efforts would certainly improve the lettering skill and style

4 B.I. Standards (Bureau of Indian Standards) IS: 962-1989 (lettering for technical drawings) adopted from ISO: 3098/1-1974(E).

The essential features of lettering on engineering drawings are:

1 Legibility

2 Uniformity

3 Rapidity of execution

4 Suitability for micro filming, photographic, re-production, Xeroxing, ammonia printing, etc.

Since time is more important, the lettering should be in plain and simple style so that it can be done in freehand with speed. Single stroke letters satisfy the above requirements.

Recommended sizes of letters and numerals

(Table - 6.01)

Items	Size Height in mm
Drawing number in title block and letters denoting cutting plane section	10,12
Title of drawing	6,8
Sub-title and heading	3,4,5,6
Notes, such as legends, schedules,materials list, dimensioning	3,4,5

Letters and numerals are designated by their heights. However, actual sizes used depend upon the size of the drawing and the purpose for which it is intended.

The standard height for most lettering is 3 mm. For longer drawings a height of 5 mm to 6 mm is recommended. For special notes and title block information uniform lengths of 4 mm, 6 mm and 8 mm can be used.

Uniformity, size and spacing:

1 Lettering must appear neat and pleasing, like, uniformity in height, inclination, spacing and strength of line essential for good lettering. The lettering must be accurate, sharp, dark and easy to read.

2 Horizontal guidelines determine horizontal alignment, lettering height. It determines the spacing between lines of lettering.

3 Vertical guidelines serve to keep the verticality. It keeps proper inclination of freehand characters uniform.

4 In any drawing, only one kind of lettering style must be used. Lower case (small) letters are not generally used, except as symbols.

Dimensioning

Objectives: At the end of this lesson you shall be able to
- **to define Dimensioning.**
- **to dimension the drawings the drawings as per Indian Standard Specification.**

Introduction

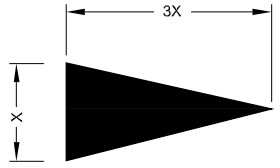
1 Dimensioning plays a predominant role in engineering drawing. It expresses the quantity, adds value and signifies relation to the parts of the diagram. This information is very vital. Without dimension, the meaning of the drawing is lost.

2 Dimensioning is provided in every part of the drawing to provide enough of details, to avoid misconception, confusion, leaving to chance and doubts etc.

3 Dimensioning must be clear and appear only once.

Arrow heads: (Fig 1)

Fig 1



Arrowheads are marked at both ends of the dimension lines. The size of the arrowheads should be proportionate to the size of the drawing.

Fig 2

DOUBLE STROKE VERTICAL CAPITAL LETTERING (7:5) (IS 696-1972).

INCLINED CAPITAL LETTERS (7:5) (IS 696-1972).

DOUBLE STROKE LOWER CASE LETTERS (IS 696-1972).

NUMERICAL (VERTICAL)

NUMERICAL (SLANT)

Oblique strike and origing indication

1 Where space is insufficient for arrowheads, oblique's stroke or dot may be used.

2 Oblique stroke is drawn as a short line inclined at 45 Degree. The origin indication is drawn as a small open circle of about 3mm Diameter.

Leader line is a line referring to a feature like dimension object and outline it continuous thin line.

1 If the leader line ends with in outline of an object, it should have a dot at the end.

2 It should have an arrowhead if it ends on the outline of an object.

3 It should terminate without dot or arrowhead if it ends on a dimension line.

Dimensioning method(IS: 11669-1986)

Method-1: (Fig 2 and Fig 3) (Aligned system)

1 The dimensions lines are drawn parallel to the object lines.

2 The dimensions values are placed above the dimensions lines and not by breaking the dimensions lines.

Fig 2

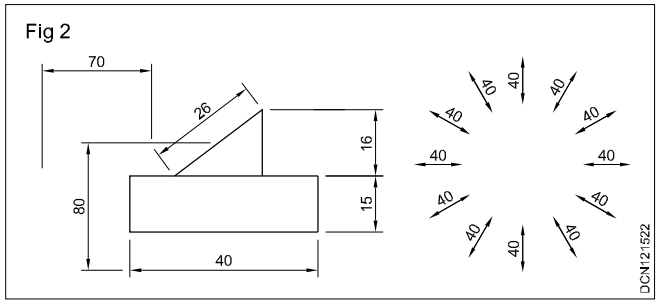
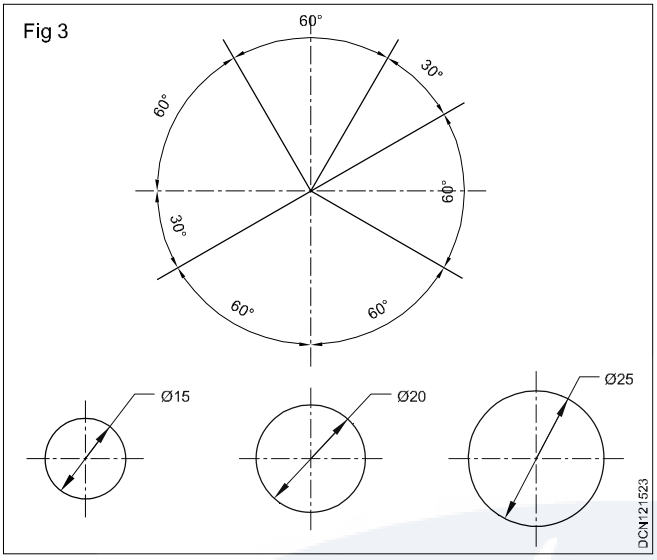


Fig 3



3 The dimensions values are placed near the middle and clear of the dimensions lines.

4 All dimensions are so placed that they can be read from the bottom or the right hand edge of the drawing sheet.

Method-2: (Fig 4) (Undirectional system)

1 The dimensions lines are drawn parallel to the object lines.

2 The horizontal lines are dimensioned as in method-1

3 Vertical and inclined lines are dimensioned by writing the dimensions value in the gap left in the middle of the dimensions lines.

4 All dimensions are so placed that they can be read from the bottom of the drawing sheet.

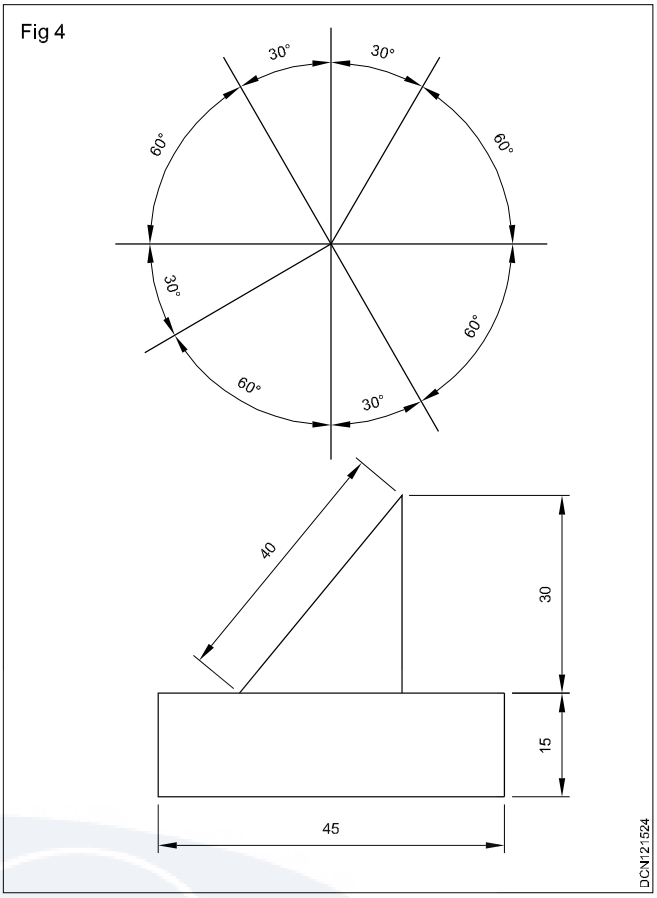
On any one drawing, use only one method of placing the dimensions.

Unit of dimensioning

1 The recommended unit of dimensioning is millimeters. There is no need to add the symbol for the unit e.g. a dimension value 40 means 40mm but a foot-note like "all dimensions in mm" is written in a prominent places.

2 When the dimension is less than 1, a zero should be placed before the decimal point such as 0.75.

Fig 4



Procedure to mark dimensions: (Fig 5 and Fig 6)

1 Draw dimensions line parallel to the object line to be dimensioned at about 8 to 10mm from it.

2 Draw projection lines perpendiculars' to the object line. Where necessary, they may be drawn obliquely but parallel to each other.

3 Mark arrowheads at both end is of the dimensions line as per method-1 or method-2

Fig 5

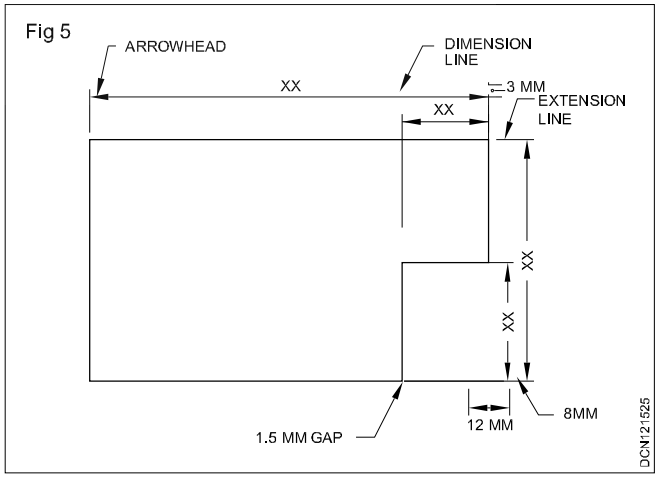
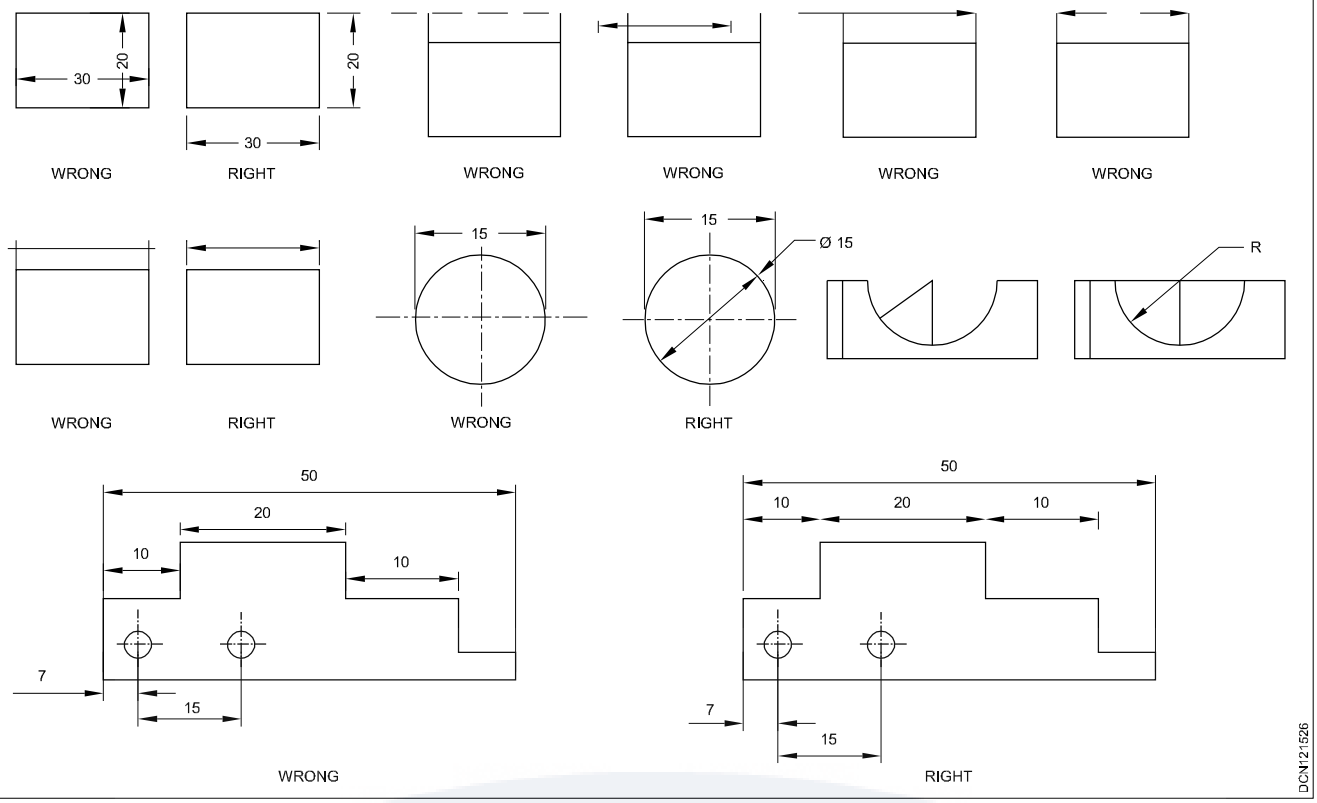


Fig 6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