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Engineering drawing

- Every language has its own rules of grammar.
- Rules of grammar : Lines, lettering, and dimensioning

Dimensioning

It is a specification of the size and shape of a part or assembly.

The important information on a drawing is the dimension and tolerance of all of its features.

Every drawing showing the true shape of an object must supply its exact length, breadth, height, sizes and positions of holes, grooves etc. supplying this information on a drawing is called dimensioning.

Dimension line : Dimension line is a thin continuous line. It is terminated by arrowheads touching the outlines

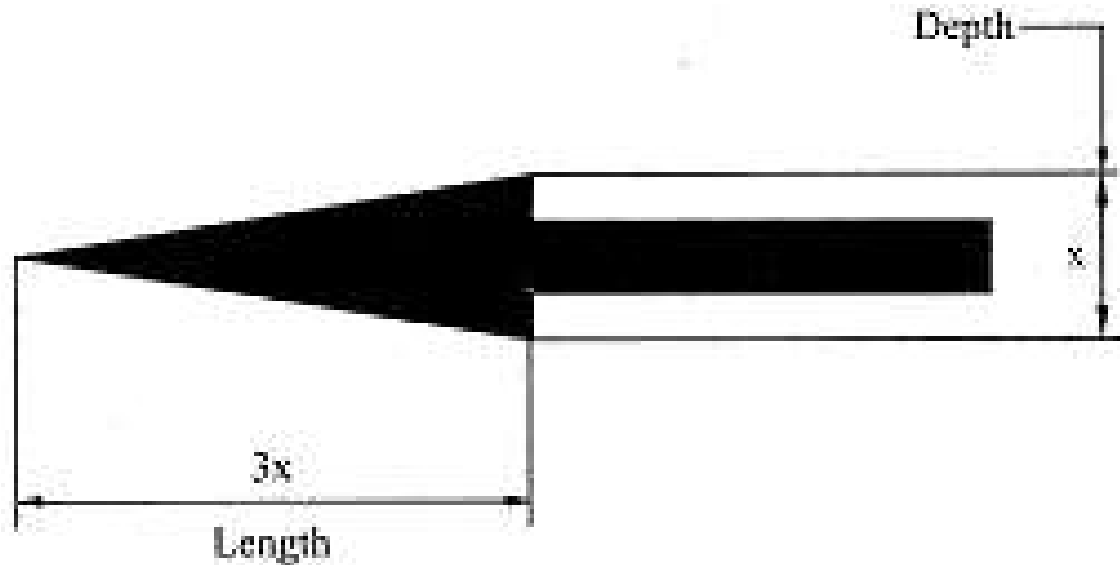
Extension line : An extension line is also a thin continuous line drawn in extension of an outline.

Arrowhead : An arrowhead is placed at each end of a dimension line. Its pointed end touches an outline or extension line. The size of an arrowhead should be proportional to the thickness of the outline.

Leader : One of the end of leader terminates either in an arrow head or a dot. The arrowhead touches the outer line where the dot is placed within the outer line. The other end is terminated in a horizontal line.

Leader is never drawn vertical or horizontal or curved. It is drawn at a convenient angle of not less than 30° to the line to which it touches

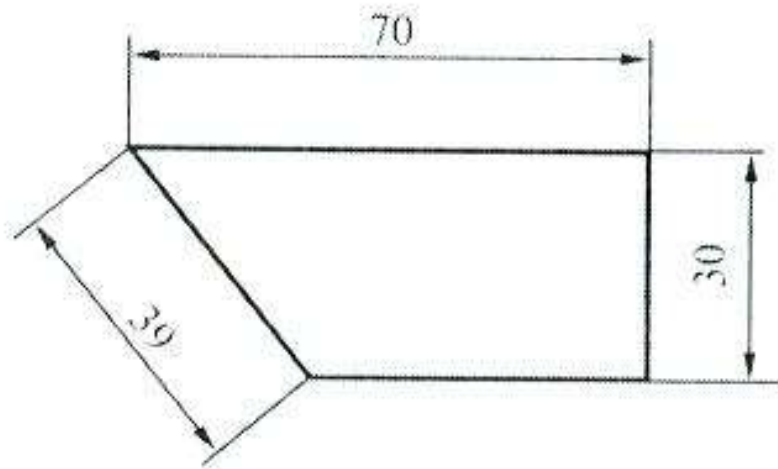
Arrowhead : An arrowhead is placed at each end of a dimension line. Its pointed end touches an outline or extension line. The size of an arrowhead should be proportional to the thickness of the outline.



Proportions of an Arrow Head.

Aligned dimensioning system

The dimension is 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 dimension should be placed near the middle and above.

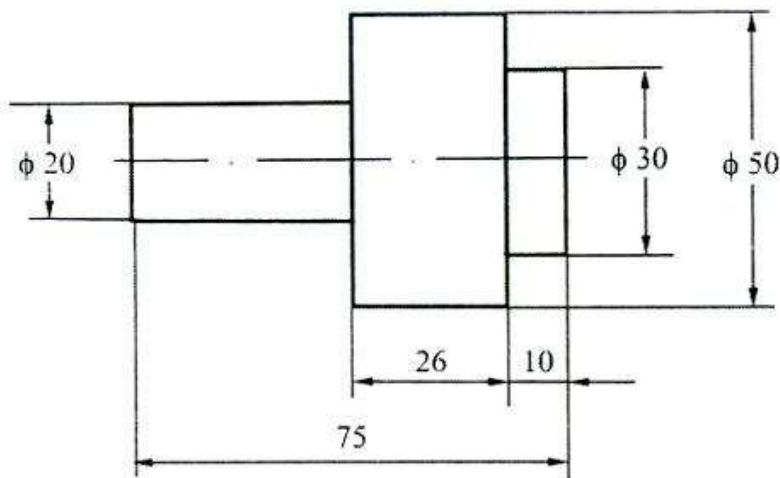


Aligned Method

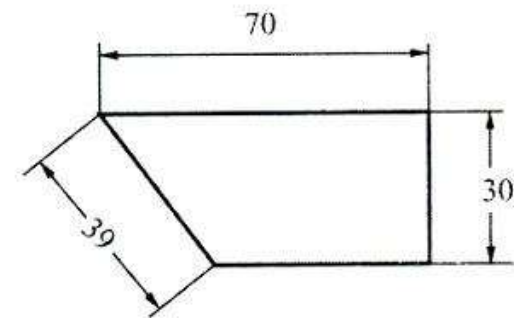
Unidirectional dimensioning system

In unidirectional system all dimensions are so placed that they can be read from the bottom of the drawing sheet.

The dimension lines are broken near the middle for inserting the dimensions. This system is mainly used for large drawings.



(a)

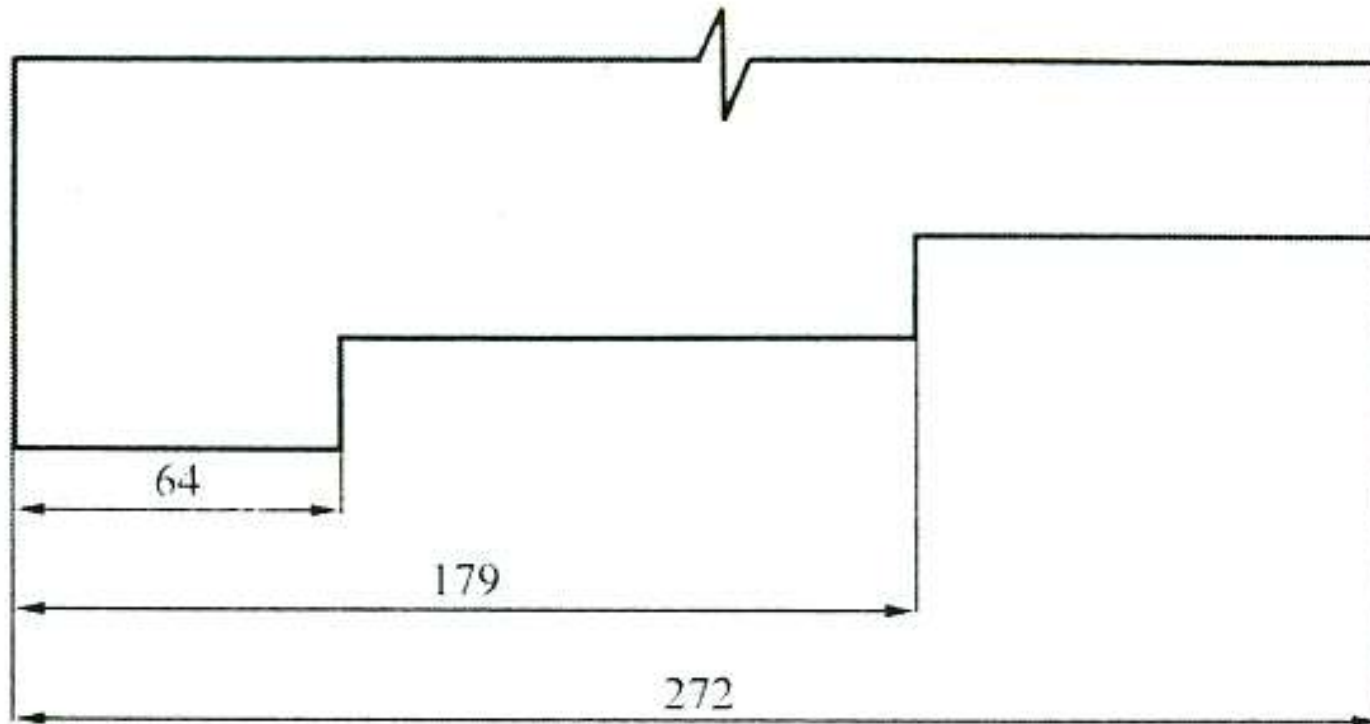


(b)

Uni-directional Method.

Progressive or parallel dimensioning

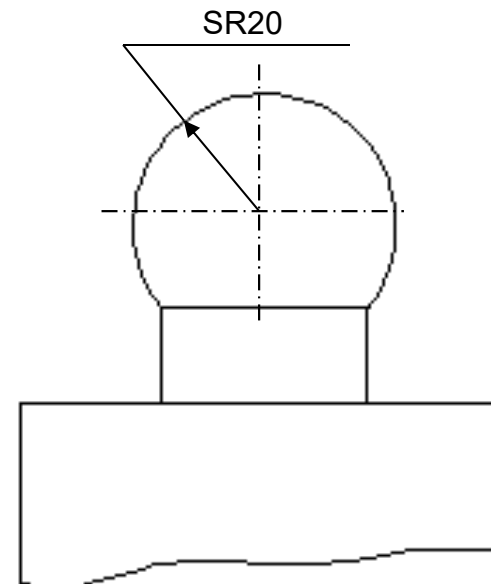
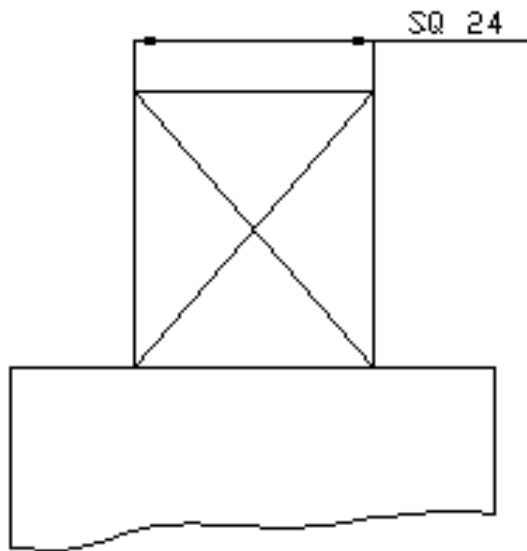
All dimension are shown from a common base line
Smaller dimensions should be placed nearer the view and
larger further away so that extension lines do not cross
dimension lines.



Parallel Dimensioning.

Letter SQ should precede the dimension for a rod of square cross-section.

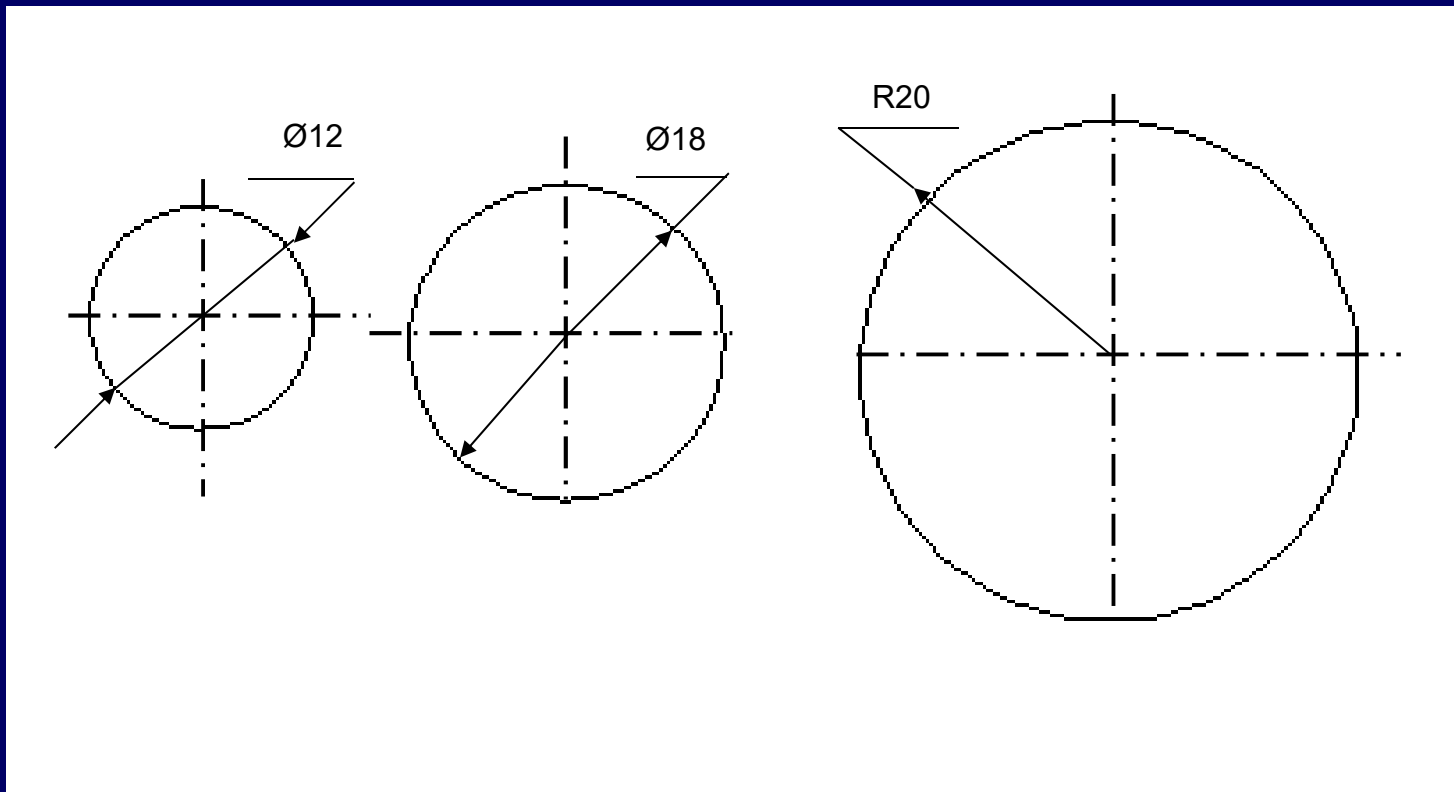
The SPHERE should be placed before the dimension of a spherical part.



Symbols Used in Dimensioning

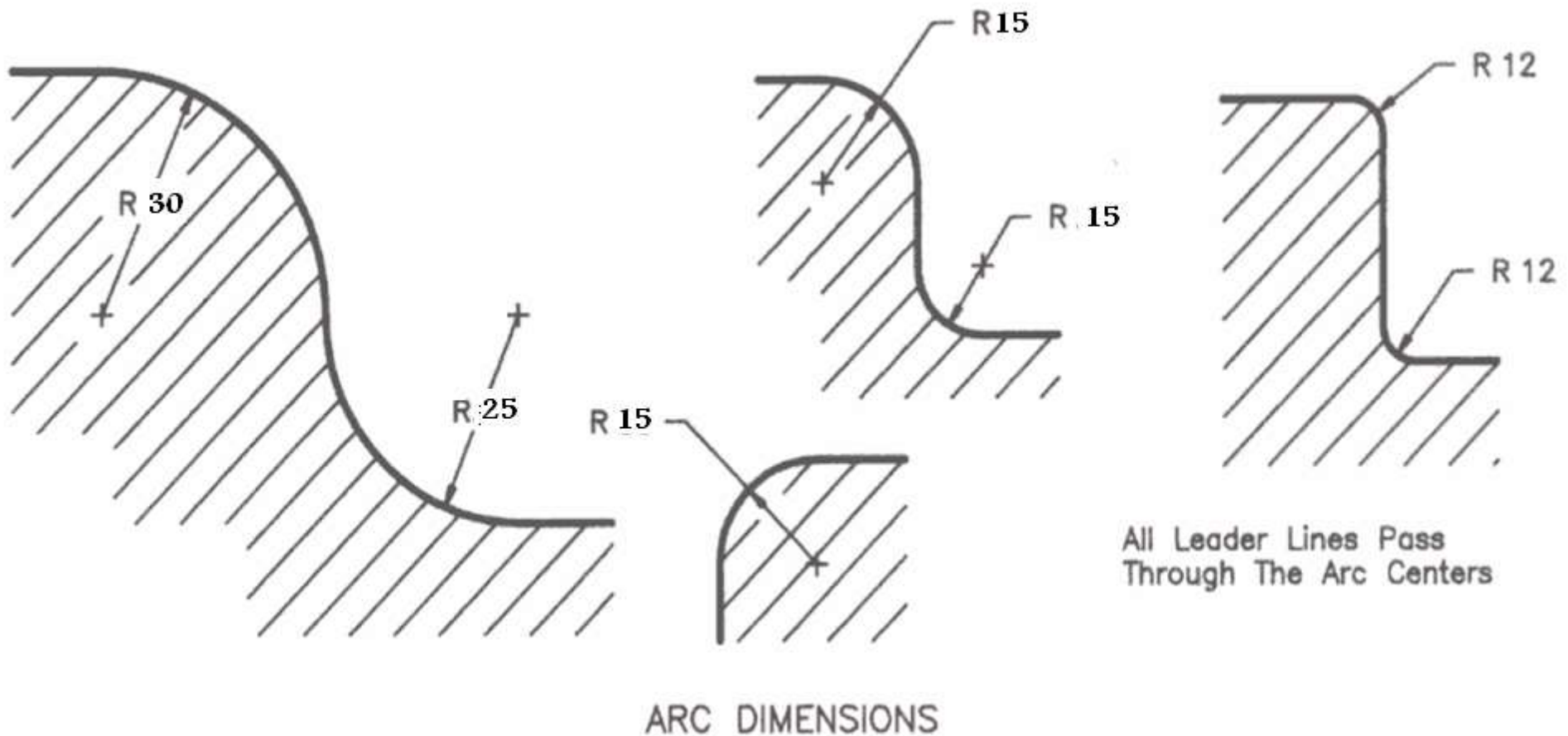
GENERAL DIMENSIONING SYMBOLS		
CURRENT PRACTICE	ABBREVIATION IN NOTES	PARAMETER
∅	DIA	DIAMETER
S∅	SPHER DIA	SPHERICAL DIAMETER
R	R	RADIUS
CR	CR	CONTROLLED RADIUS
SR	SR	SPHERICAL RADIUS
└	CBORE or SFACE	COUNTERBORE SPOTFACE
∨	CSK	COUNTERSINK
∇	DP	DEEP
○	—	DIMENSION ORIGIN
□	SQ	SQUARE
()	REF	REFERENCE
x	PL	PLACES, TIMES
⌒	—	ARC LENGTH
▷	—	SLOPE
▷	—	CONICAL TAPER

Various methods of dimensioning different sizes of circles.



Dimensioning the Radius of an Arc

Dimension line for the radius should pass through the centre of the arc
Dimension an arcs by its radius.



The general rules of dimensioning are:

1. Dimensioning should be done completely that further calculation of any dimension or direct measurement from the drawing is not necessary.
2. Dimension should be outside the view.
3. Dimension should be placed on the view where its use is shown more clearly.
4. Do not dimension to hidden lines;
5. Dimension lines should not cross any other line of the drawing.
6. An outline or a centre line should never be used as a dimension line.
7. Aligned system of dimensioning is recommended.

Thank you