

Eng.
Drawing.

Hand Note

Engineering Drawing:

▣ Arrows - 3mm width/wide and $\frac{1}{3}$ rd wide as they are long. arrow placed at the end of dimension line.

▣ Graphics Language: In engineering application - use line to represent the surfaces, edges. and contours of object.
drawing / drafting.

▣

Free hand	instrumental	computer based

▣ Free hand drawing - The lines are sketched without using instruments or other than pencils and erasers.

▣ Instrument drawing - Instruments are used to draw straight lines, circles and curves concisely and accurately. Thus, the drawings are usually made to scale.

▣ Computer drawing: The drawing are usually made by commercial software such as AutoCAD, Solid works etc.

□ Engineering Drawing:

technical

- An engineering drawing is a type of drawing, used to fully and clearly define requirements for engineered items, and is usually created in accordance with standardized conventions for layout, nomenclature, interpretation, appearance size, etc.

is

- Its purpose to accurately and unambiguously capture all the geometric features of a product or a component.
- The end goal of an engineering drawing is to convey all the required information that will allow a manufacturer to produce that component.

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- Engineering Drawing is a two dimensional representation of three dimensional object.
- In general it provides necessary information about the shape, size, surface quality, material, manufacturing process, etc of the object.
- It is a graphic language from which a trained person can visualise objects.

▣ Elements of Engineering Drawing:

- Graphic language: Describe shape
- Word language: Describe size, location and specification of the object.

▣ Graphic language

- line types
- Projection Method
- Geometric construction

▣ Word language

Lettering

▣ Standard code:

ANSI - American National Standard Institute

JIS - Japanese Industrial Standard

BS - British Standard

AS - Australian Standard

DIN - Deutsches Institut für Normung - Germany

ISO - International Standards Organization

▣ Drawing sheet

- Trimmed paper of a size A0 ~ A4

- Standard sheet size (JIS)

A4 - 210 x 297

A3 - 297 x 420

A2 - 420 x 594

A1 - 594 x 841

A0 - 841 x 1189

A0 = 841 x 1189 - 33.1 x 46.8

A1 = 594 x 841 - 23.4 x 33.1

A2 = 420 x 594 - 16.5 x 23.4

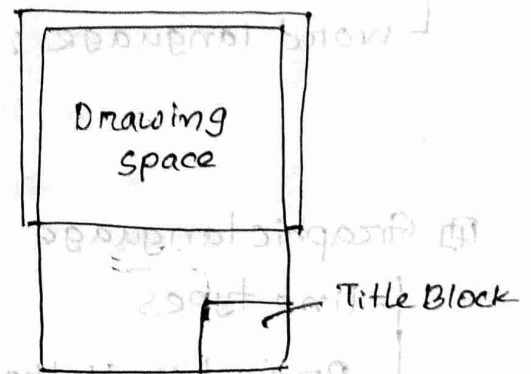
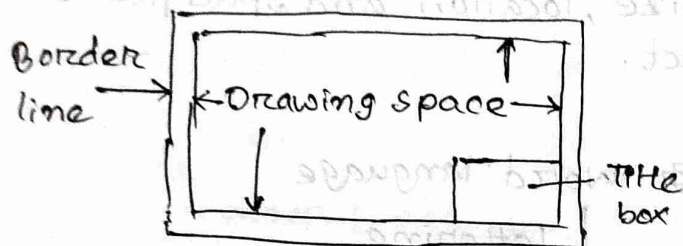
A3 = 297 x 420 - 11.7 x 16.5

A4 = 210 x 297 - 8.3 x 11.7

Orientation of drawing sheet.

1. type X (A0 ~ A4)

2. type Y (only A4)



Drawing Scales

Basic line type:

Continuous thick line - visible line

Continuous thin line - Dimension line, extension line, leader line

Dash thick line - Hidden line

Chain thin line - centre line

- Visible line:- represents features that can be seen in the current view.
 - a line drawn to represent visible outlines/visible edges/surface boundary line of objects.
- Dimension line:- Dimension lines are drawn to mark dimension.
- Extension line:- They are extended slightly beyond the respective dimension line.

- center line - represents symmetry, path of motion, center of circle, axis of a symmetrical parts.

- Hidden lines - represents feature that cannot be seen.

- phantom line - represent alternate motion of path position of moving parts.

Text on drawing:

- To communicate nongraphic information
- A substitute for graphic information, in those instance where text can communicate the needed information more clearly and quickly.
- Legibility
- Uniformity

Basic Strokes :

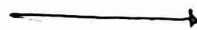
Straight



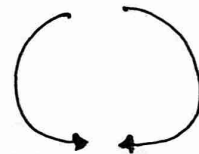
Slanted



Horizontal



Curved



Line of sight (projection)

- Parallel projection

- Perspective projection

not used

- difficult to create
- doesn't reveal exact shape / size

Orthographic projection: - Is a parallel projection technique in which the parallel lines of sight are perpendicular to the projection plane.

→ Two or ~~three~~ perpendicular views

Orthographic / projection
multiview

- more than one view is needed to represent the object

Adv - represents ^{accurate} shape and size

dis - require practice in writing and reading.

Exonometric /
Isometric drawing

- 3D of an object shown

Adv - easy to understand

dis - Shape and angle distortion.

Auxiliary - used to show true dimension of an inclined plane.

6 principal view, Front - Rear
Top - bottom
Left - Right (side)

- 2D orthographic projection - Top, front, right