Alphabet of Lines

Introduction to Drafting and Design
What is the Alphabet of Lines?

- Developed by the American Society of Mechanical Engineers (ASME).
- The Alphabet of Lines is used to make a drawing neater and clearer to understand.
- Different lines represent different aspects of a drawing.
So what are these lines?

- Construction Lines
- Visible/Object Lines
- Hidden Lines
- Center Lines
- Dimension Lines
- Extension Lines
- Phantom Lines
- Long Break Lines
- Short Break Lines
- Cutting-plane Lines
- Section Lines
- Chain Lines
- Leaders
- Symmetry Lines
- Border Lines
Construction Lines

- Used to initially lay out a drawings.
- Used for guidelines for lettering.
- Drawn very light and thin so that they are barely visible.
Visible/Object Lines

- Used to represent the visible edges of an object.
- Should be the most prominent on the drawing.
- Drawn thick and dark.
- These are thicker than construction lines.
Hidden Lines

- Used to represent edges, surfaces or corners of an object hidden from view.
- Drawn as thin, dark dashed lines.
- Spacing can vary slightly.
- Only the most important hidden parts are shown on the drawing to keep the drawings from becoming cluttered.
Center Lines

- Used to show the center of circles and arcs.
- Drawn as thin lines.
- Drawn using two long dashes and a shorter dash.
- To show the center of a round object, two centerlines are used so that the short dashes cross in the center.

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Dimension Lines

- Used for dimensioning and notes.
- Drawn as thin lines.
- Drawn with arrowheads on each end and placed between extension lines.
- The dimension is lettered above the dimension line approximately half way between the two extension lines.
Extension Lines

- Used to extend dimensions from the related objects.
- Drawn as thin lines.
- Drawn with a short space between the object and line.
- Extend about 3 mm beyond the dimension line.
Phantom Lines

- Used to show objects that are not hidden but they are simply not in view.
- Also used to indicate alternate positions of moving parts, lines of motion, adjacent parts and repetitive details.
- Drawn as thin, dark lines.
Long Break Lines

- Used to indicate parts of the object has been removed.
- Used when it is desirable to shorten the view of a long part.
- Long break lines are drawn thin with freehand “zigzags”.

[Diagram of long break lines]
Short Break Lines

- Used to indicate parts of the object has been removed.
- Used when it is desirable to shorten the view of a long part.
- Short break lines are drawn thick and with freehand wavy lines.
Cutting-plane Lines

- Used to indicate the plane through which a cut was made.
- A cutting plane line is usually a heavy line with long dashes with arrowheads at both ends of the line.
- The arrowheads point to the surface to be viewed.
Section Lines

- Used to indicate the surface in the section view imagined to have been cut along the cutting plane line.
- Thin “cross hatching” lines drawn at a 45° angle.
Leaders

- Used to point to notes or dimensions.
- Drawn as thin lines.
- Consist of an arrowhead and angled line connected to a surface.
- Arrowheads touch the object lines while the dot rests on a surface.
Border Lines

- Used to outline the entire drawing.
- They are a continuous thick line on the outer rim of the paper.
Let’s look again...
If lines happen to overlap, then there is a hierarchy to which the lines show up. The hierarchy of lines is as follows:

- Object or visible line
- Hidden line
- Cutting Plane line
- Center line
- Break line
- Dimension and extension lines
- Sectioning lines